

## **7.0 ALTERNATIVE BUILD TRAFFIC CONDITIONS**

Incorporated into the proposal for the Riverside MUPDD project are three (3) alternative highway design elements aimed at reducing impacts from the MUPDD site on the area roadway network, particularly on the roadways within the adjacent residential communities. The alternatives were proposed in the *Riverside Hamlet Center – A Vision for the Future* report of June, 2005, produced by Hutton Associates, Inc. The proposed highway design alternatives are: (1) the alignment of the Rivercatwalk driveway with Old Quogue Road along SR 24; (2) the extension of Main Street through its intersection with Old Quogue Road to a new intersection at CR 104; and (3) the construction of a new road from the east side of the MUPDD site to Ludlam Avenue.

The alternatives are recognized as being speculative in nature and not considered part of the proposed action, which is to construct the MUPDD site in a manner described in the Build condition analysis. The purpose of the analysis contained herein is to evaluate the impact of these alternatives and determine if they would succeed in producing the desired benefits on the roadway network.

### **7.1 Traffic Volumes and Intersection Capacity – Alternative 1 (Alignment of the Rivercatwalk Driveway with Old Quogue Road)**

Alternative 1 involves the abandonment of the two (2) un-signalized driveways for the Rivercatwalk project and aligning one (1) new driveway with Old Quogue Road to form a new four-way intersection along SR 24. The advantage to aligning the driveway with Old Quogue Road is that it removes conflicting turn movements caused by the offset of the westernmost Rivercatwalk driveway from Old Quogue Road. It would also have greater prospects of becoming a signalized intersection.

### **Traffic Volumes (Alternative 1 Scenario)**

Trips for the Rivercatwalk project were assigned to each of the movements at the aligned driveway intersection with Old Quogue Road and added to Build condition traffic flows that will exist in 2012. As the modification only substantially impacts the subject intersection, and minimally impacts the Riverhead Traffic Circle and the intersection of CR 104 and Old Quogue Road/Ludlam Avenue, directional distributions did not need to be developed. The resulting traffic volumes are presented on Figure 7-1 through Figure 7-4.

### **Capacity Analysis and Levels of Service (LOS) for the Alternative 1 Scenario**

Using the methods described in Section 3.2, and in conformance with the procedures described in the *Highway Capacity Manual 2000 (HCM 2000)*, capacity analyses were performed for each of the intersections and for each peak traffic period. The Alternative 1 Build capacity analysis results and levels of service are presented on Table 7-1. Capacity analysis results for individual intersections are provided in Appendix E.

#### **7.1.1 Results of Intersection Capacity Analysis (Alternative 1 Scenario)**

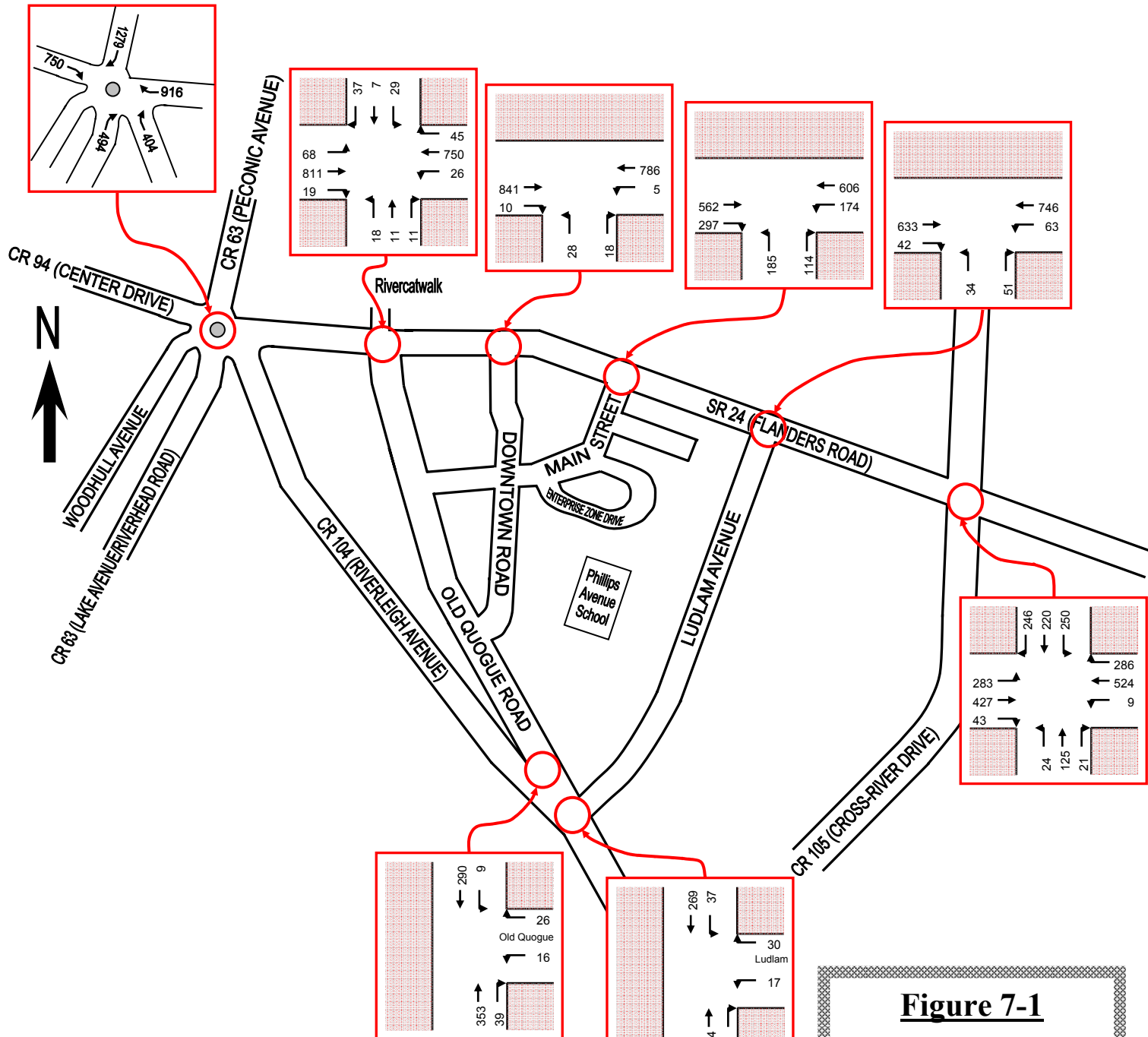
##### **State Route 24 at Old Quogue Road/Rivercatwalk Driveway**

Conditions at the intersection would significantly improve during the morning peak traffic period from a LOS F to a LOS C. This is attributable to through traffic movements along SR 24 being converted to turning movements at the intersection. The other peak periods would, however, continue to operate at LOS F with slightly reduced delays for some movements and increased delays for other movements.

Although the alignment proposal did not produce overall intersectional improvements, creating a four-way intersection makes it a much more viable candidate for having a traffic signal, or some other effective traffic control device, installed. For this reason, Alternative 1 should be seriously considered when developing the MUPDD project.

# TRAFFIC VOLUME COUNTS

## Riverside M.U.P.D.D. 2012 Alternative 1 Build Conditions



Representational Diagram  
Not To Scale  
Alignment May Be Altered

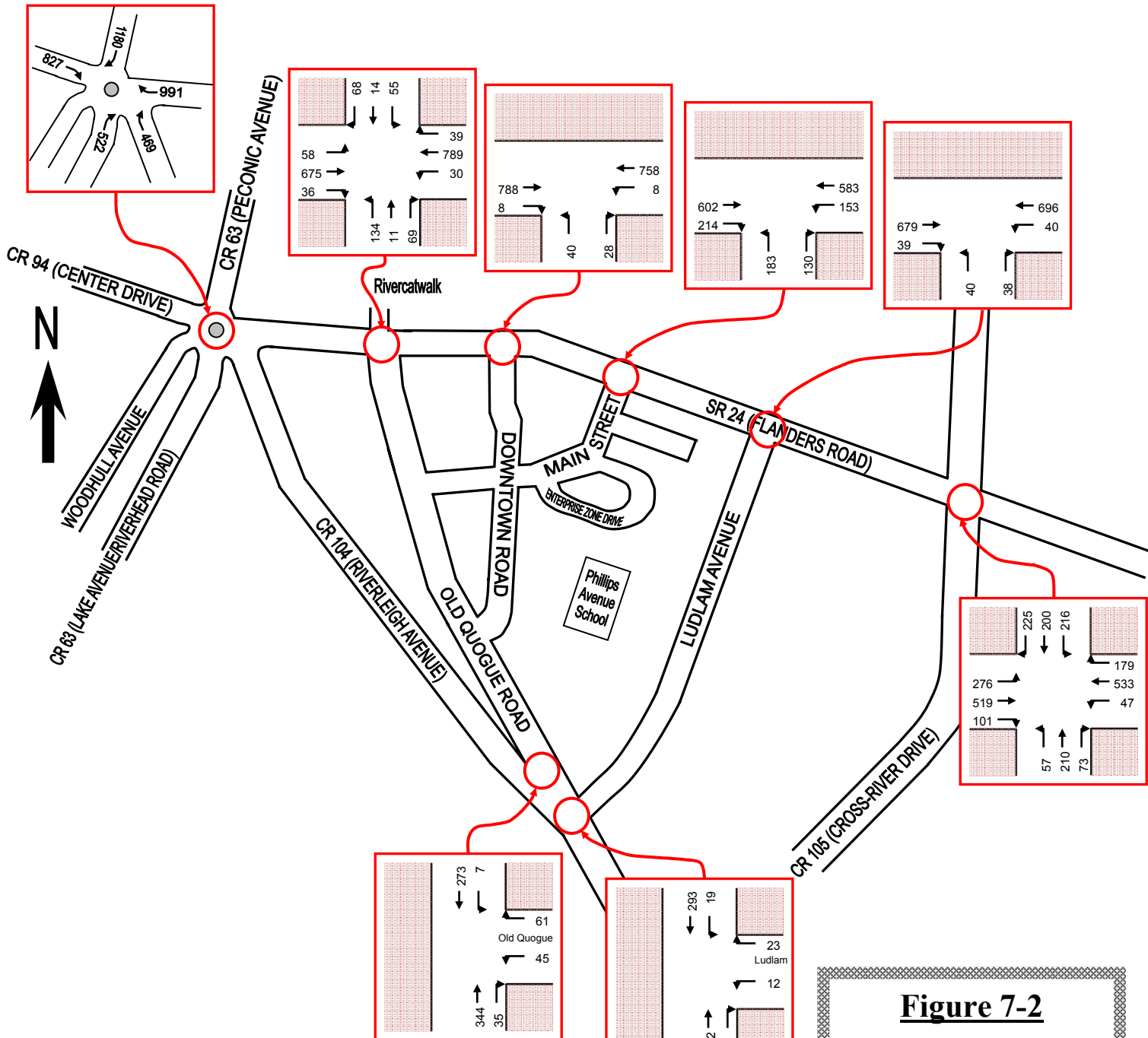
**Figure 7-1**

Traffic Volume Counts  
Turning Movements

Alt. 1 Build Conditions  
AM Peak Period

# TRAFFIC VOLUME COUNTS

## Riverside M.U.P.D.D. 2012 Alternative 1 Build Conditions



Representational Diagram  
Not To Scale  
Alignment May Be Altered

**Figure 7-2**

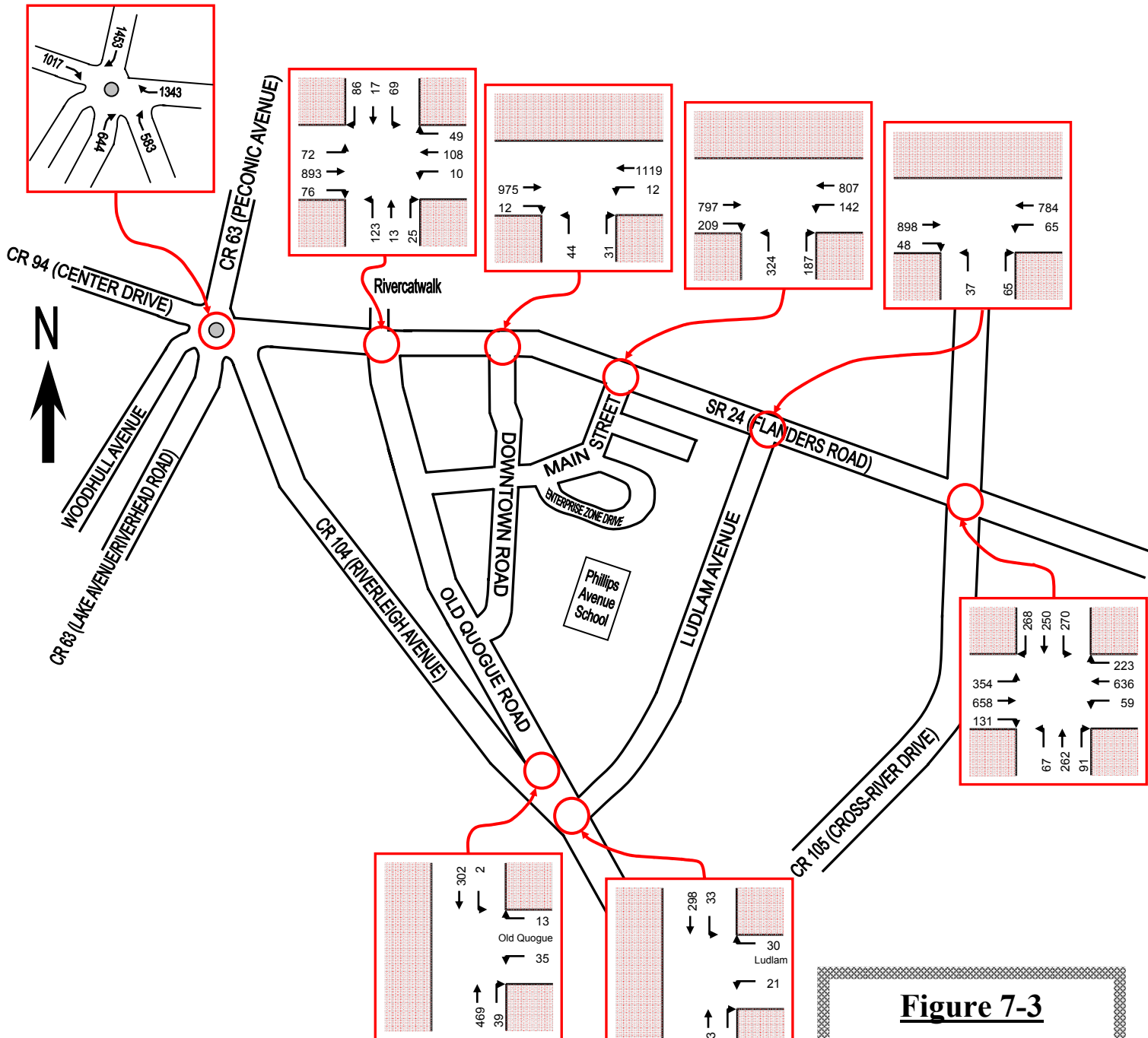
Traffic Volume Counts  
Turning Movements

Alt. 1 Build Conditions  
Midday Peak Period



# TRAFFIC VOLUME COUNTS

## Riverside M.U.P.D.D. 2012 Alternative 1 Build Conditions



Representational Diagram  
Not To Scale  
Alignment May Be Altered

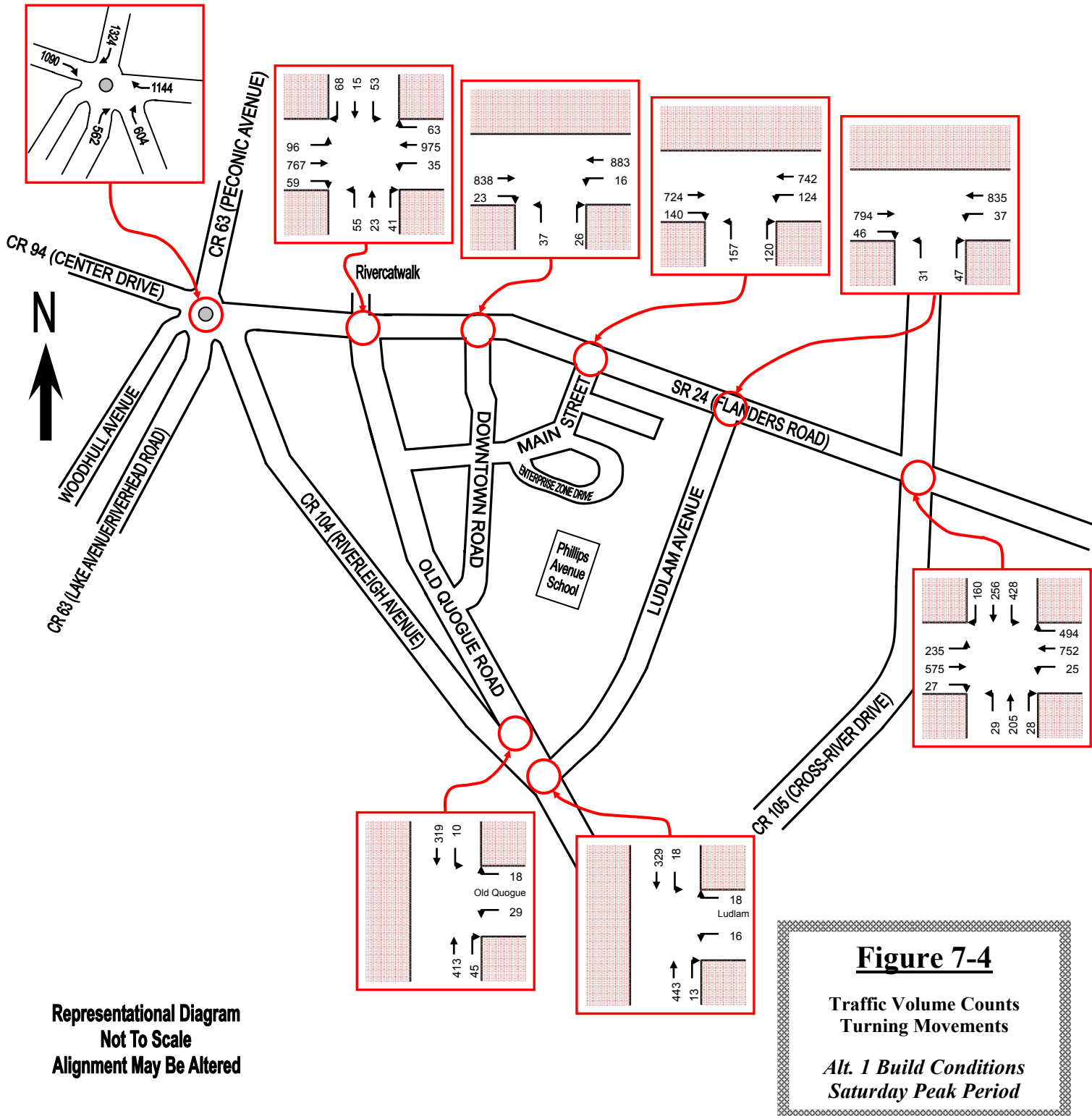
**Figure 7-3**

Traffic Volume Counts  
Turning Movements

Alt. 1 Build Conditions  
PM Peak Period

# TRAFFIC VOLUME COUNTS

## Riverside M.U.P.D.D. 2012 Alternative 1 Build Conditions



**TABLE 7-1: ALTERNATIVE 1 BUILD INTERSECTIONAL LEVELS OF SERVICE**  
Riverside MUPDD

Intersection	Control	Movement / Approach	Weekday AM Peak Hour				Weekday Midday Peak Hour				Weekday PM Peak Hour				Saturday Midday Peak Hour			
			Overall	LOS	Delay	v/c	Overall	LOS	Delay	v/c	Overall	LOS	Delay	v/c	Overall	LOS	Delay	v/c
Riverhead Traffic Circle (SR 24, CR 94, CR 104, CR 63, & Peconic Avenue Intersection)	Roundabout Stop Signs	NB CR 63	F	F	329.8	1.60	F	F	863.7	2.73	F	F	1805.0	4.52	F	F	1745.0	3.93
		NWB CR 104	F	F	324.8	1.54	F	F	1722.7	3.58	F	F	2096.2	4.43	F	F	2007.5	4.23
		WB SR 24	F	F	285.2	1.58	F	F	509.6	2.08	F	F	1431.5	4.11	F	F	1461.5	4.14
		SB Peconic	F	F	481.8	2.03	F	F	455.1	1.97	F	F	826.2	2.80	F	F	1332.8	3.90
		EB CR 94	F	F	237.6	1.48	F	F	8294.5	19.40	F	F	12575.2	28.90	F	F	18410.3	41.82
SR 24 (Flanders Road) at CR 105 (Cross River Drive)	Traffic Signal	EB-L	D	D	52.6	0.92	E	E	59.3	0.95	F	F	94.7	1.06	E	E	66.2	0.93
		EB-T	B	B	18.5	0.54	C	C	20.6	0.65	B	B	17.6	0.67	B	B	15.6	0.62
		EB-R	B	B	13.7	0.05	B	B	14.3	0.14	B	B	11.0	0.14	B	B	9.4	0.03
		WB-L	C	C	20.2	0.03	C	C	21.8	0.20	C	C	20.7	0.26	B	B	17.2	0.09
		WB-T	D	D	40.2	0.87	D	D	43.0	0.89	D	D	35.3	0.84	E	E	68.8	1.03
		WB-R	C	C	23.8	0.43	C	C	22.2	0.27	C	C	20.5	0.28	C	C	24.4	0.62
		NB-L	B	B	19.1	0.08	B	B	19.4	0.12	C	C	27.2	0.19	C	C	32.2	0.13
		NB-T	C	C	24.6	0.16	C	C	25.1	0.22	C	C	34.8	0.36	D	D	39.8	0.37
		NB-R	C	C	23.9	0.06	C	C	24.8	0.17	C	C	34.5	0.29	D	D	37.8	0.11
		SB-L	B	B	18.4	0.33	B	B	18.5	0.34	C	C	26.6	0.43	D	D	41.2	0.74
		SB-T	C	C	22.8	0.20	C	C	22.8	0.19	C	C	32.2	0.32	D	D	36.5	0.34
		SB-R	C	C	25.3	0.44	C	C	25.2	0.43	C	C	40.3	0.69	D	D	38.4	0.47
SR 24 (Flanders Road) at Ludlam Avenue	Side Street Stop Sign	WB-L	E	A	9.7	0.09	E	A	9.5	0.05	F	B	11.1	0.10	E	B	10.0	0.05
SR 24 (Flanders Road) at Main Street	Side Street Stop Sign	NB-LR			49.8	0.60	E	E	36.0	0.45	F	F	141.6	1.03	E	E	44.0	0.49
		WB-L	B	B	11.6	0.26	B	B	11.0	0.22	B	B	12.4	0.24	B	B	11.0	0.18
		NB-L	F	F	783.7	2.48	F	F	662.2	2.22	F	F	3164.0	7.65	F	F	848.7	2.58
SR 24 (Flanders Road) at Downtown Road	Side Street Stop Sign	NB-R	B	B	14.7	0.25	B	C	16.0	0.30	D	D	28.1	0.58	C	C	18.7	0.33
		WB-L	A	A	9.9	0.01	A	A	9.7	0.01	B	B	10.7	0.02	B	B	10.0	0.02
		NB-L	F	F	63.8	0.33	F	F	64.8	0.43	F	F	341.1	1.15	F	F	100.3	0.54
SR 24 (Flanders Road) at Old Quogue Road	Side Street Stop Sign	NB-R	C	C	16.5	0.06	C	C	16.0	0.08	C	C	20.0	0.12	C	C	16.8	0.08
		EB-L	B	B	10.5	0.10	B	B	10.7	0.10	B	B	12.0	0.14	B	B	11.7	0.18
		WB-L	A	A	10.0	0.04	A	A	9.7	0.04	B	B	10.5	0.02	B	B	10.2	0.05
		NB-LR	C	C	25.0	0.20	F	F	307.7	1.51	F	F	1169.0	3.27	F	F	369.1	1.54
		SB-L	D	D	25.9	0.15	E	E	39.1	0.36	F	F	52.6	0.51	F	F	93.6	0.62
		SB-T	C	C	19.6	0.03	C	C	19.7	0.06	C	C	23.4	0.08	D	D	26.9	0.09
CR 104 (Riverleigh Avenue) at Ludlam Avenue	Side Street Stop Sign	SB-R	C	C	17.0	0.12	C	C	19.5	0.23	C	C	28.0	0.38	C	C	21.3	0.25
		WB-L	A	A	8.3	0.03	A	A	8.2	0.02	A	A	8.6	0.04	A	A	8.3	0.02
		WB-LR	B	B	13.5	0.1	B	B	12.5	0.07	C	C	15.2	0.09	B	B	13.9	0.06
CR 104 (Riverleigh Avenue) at Old Quogue Road	Side Street Stop Sign	SB-L	A	A	8.3	0.01	A	A	8.1	0.01	A	A	8.5	0.00	A	A	8.3	0.01
		SWB-L	C	C	15.1	0.08	C	C	16.5	0.23	C	C	18.8	0.14	C	C	16.2	0.11
		SWB-R	B	B	11.8	0.09	B	B	11.6	0.19	B	B	11.4	0.03	B	B	11.1	0.04

L=Left

T=Through

R=Right

LOS = Level of Service

Delay = Delay in Seconds/Vehicle

v/c = Demand Flow (Volume) to Capacity Ratio

NB = Northbound, SB = Southbound

EB = Eastbound, WB = Westbound

### **Riverhead Traffic Circle**

The alignment at Old Quogue Road causes a slight reduction in traffic volumes and delay on the westbound SR 24 approach, but not to any degree that would appreciably improve levels of service at the intersection. Motorists would not realize any benefits at the roundabout.

### **County Road 104 at Old Quogue Road/Ludlam Avenue**

The slight increases in traffic at the intersections caused by the alignment of the Rivercatwalk driveway would not have any affect on levels of service. The intersections would maintain their good LOS B and LOS C during the peak traffic periods.

## **7.2 Traffic Volumes and Intersection Capacity – Alternative 2 (Extension of Main Street to CR 104/Riverleigh Avenue)**

Alternative 2 is the proposed extension of Main Avenue from the MUPDD site, through the intersection of Old Quogue Road and Main Street, to a new intersection at CR 104. The purpose of the extension will be to potentially relieve eastbound, westbound, and southbound approaches to the Riverhead Traffic Circle by providing an alternate route to the site than SR 24. It may also help to relieve traffic conditions at the intersections of SR 24 at Downtown Road and SR 24 at Main Street. Additionally, the extension creates the possibility of dead ending Old Quogue Road at CR 104, which would reduce the amount of traffic traveling through the residential portion of Old Quogue Road that is entering or exiting the MUPDD site.

### **Traffic Volumes (Alternative 2 Scenario)**

Trips from the MUPDD project were re-distributed, to account for the roadway extension, in the manner shown on the Directional Distribution diagrams (Figure 7-5 through Figure 7-8a). It was estimated that fifteen percent (15%) of all trips, both entering and exiting, would use the new intersection when accessing and exiting the site. The trips, shown on Figure 7-9 through 7-12a, were then added to No-Build traffic

volumes, including the volume modifications generated by the Alternative 1 scenario, to produce the volumes shown on Figure 7-13 through Figure 7-16.

### **Capacity Analysis and Levels of Service (LOS) for the Alternative 2 Scenario**

Using the methods described in Section 3.2, and in conformance with the procedures described in the *Highway Capacity Manual 2000 (HCM 2000)*, capacity analyses were performed for each of the intersections and for each peak traffic period. The Alternative 2 Build capacity analysis results and levels of service are presented on Table 7-2. Capacity analysis results for individual intersections are provided in Appendix E.

#### **7.2.1 Results of Intersection Capacity Analysis (Alternative 2 Scenario)**

**The following intersections were impacted by the proposed alternative:**

##### **Riverhead Traffic Circle**

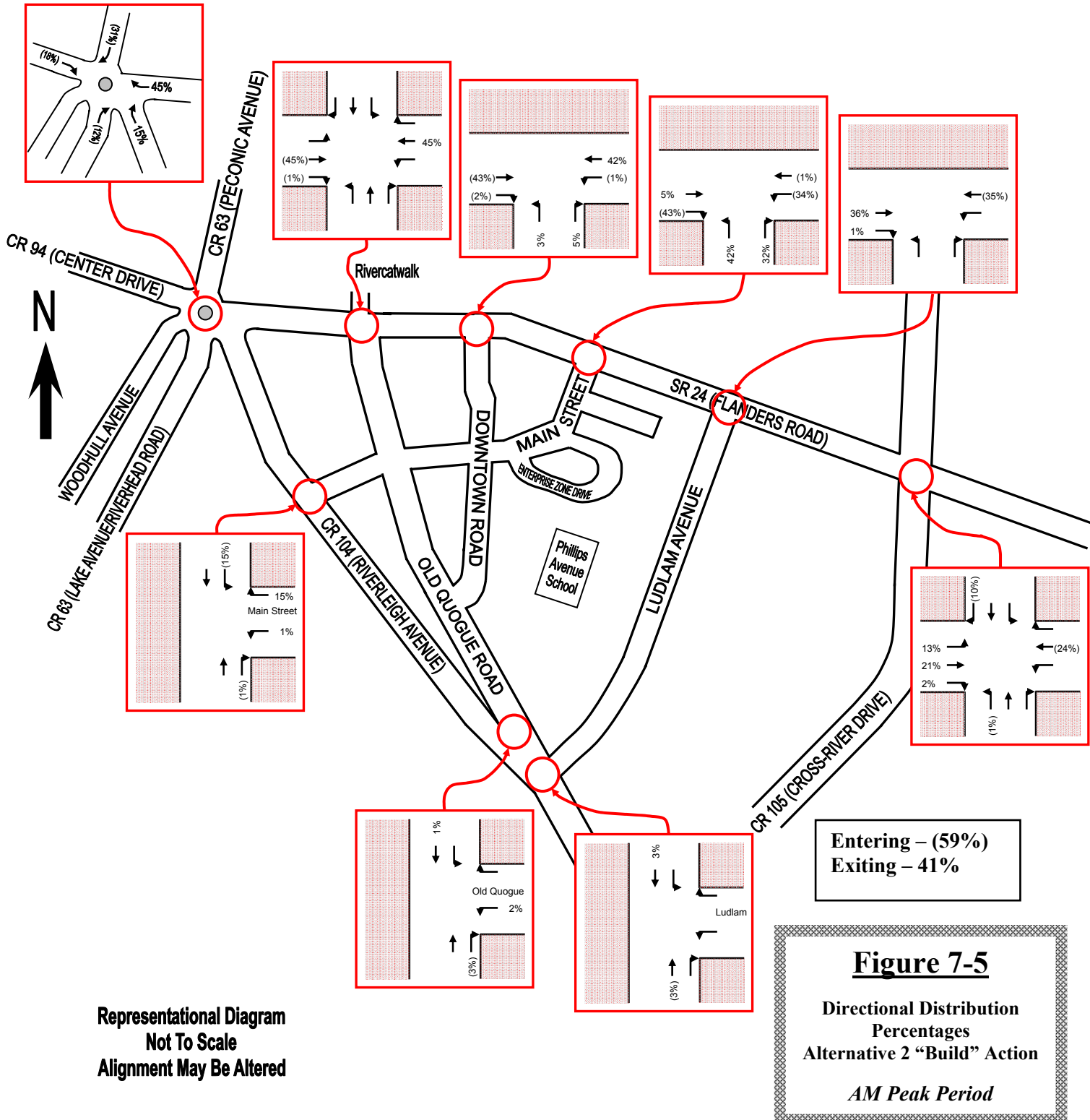
The roadway extension of Main Street to CR 104 had the opposite impact than desired. Delays increased on all approaches for each peak traffic period, indicating that vehicles circulate more efficiently through the roundabout when they approach and depart via SR 24 than when they approach and depart via CR 104.

##### **SR 24 at Downtown Road**

This intersection derived the greatest benefit from the proposed alternative action, since trips generated by the MUPDD project would most likely be drawn away from this intersection to the new intersection at CR 104 and Main Street. Capacity analysis showed the intersection would improve from LOS E and LOS F to LOS D during all peak periods. While LOS D is only marginally acceptable, the alternative would further reduce the need for mitigation at the intersection.

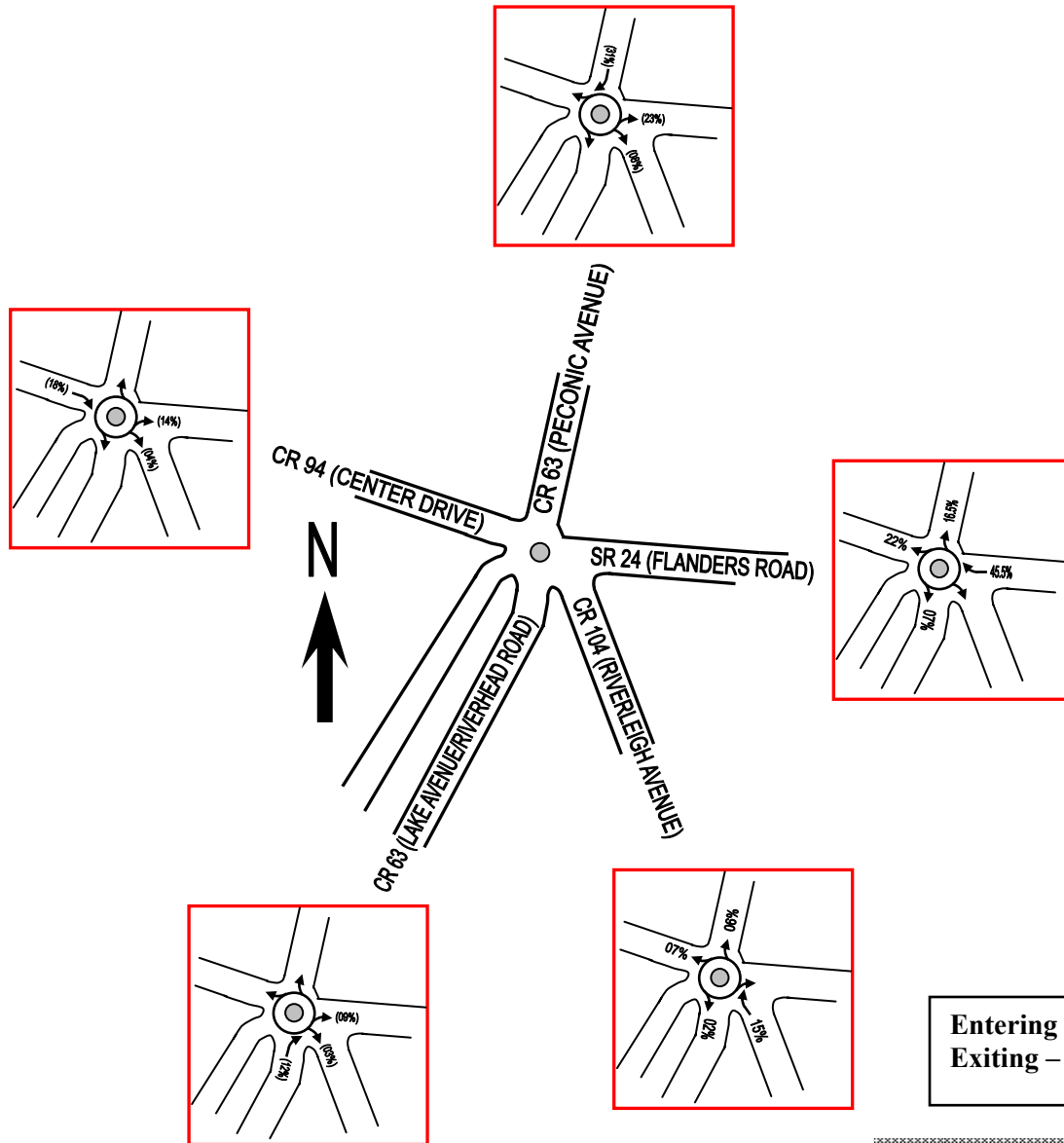
# DIRECTIONAL DISTRIBUTION

## Riverside M.U.P.D.D. Alternative 2 Action



# DIRECTIONAL DISTRIBUTION

## Riverside M.U.P.D.D. Alternative 2 Action Traffic Circle Movements



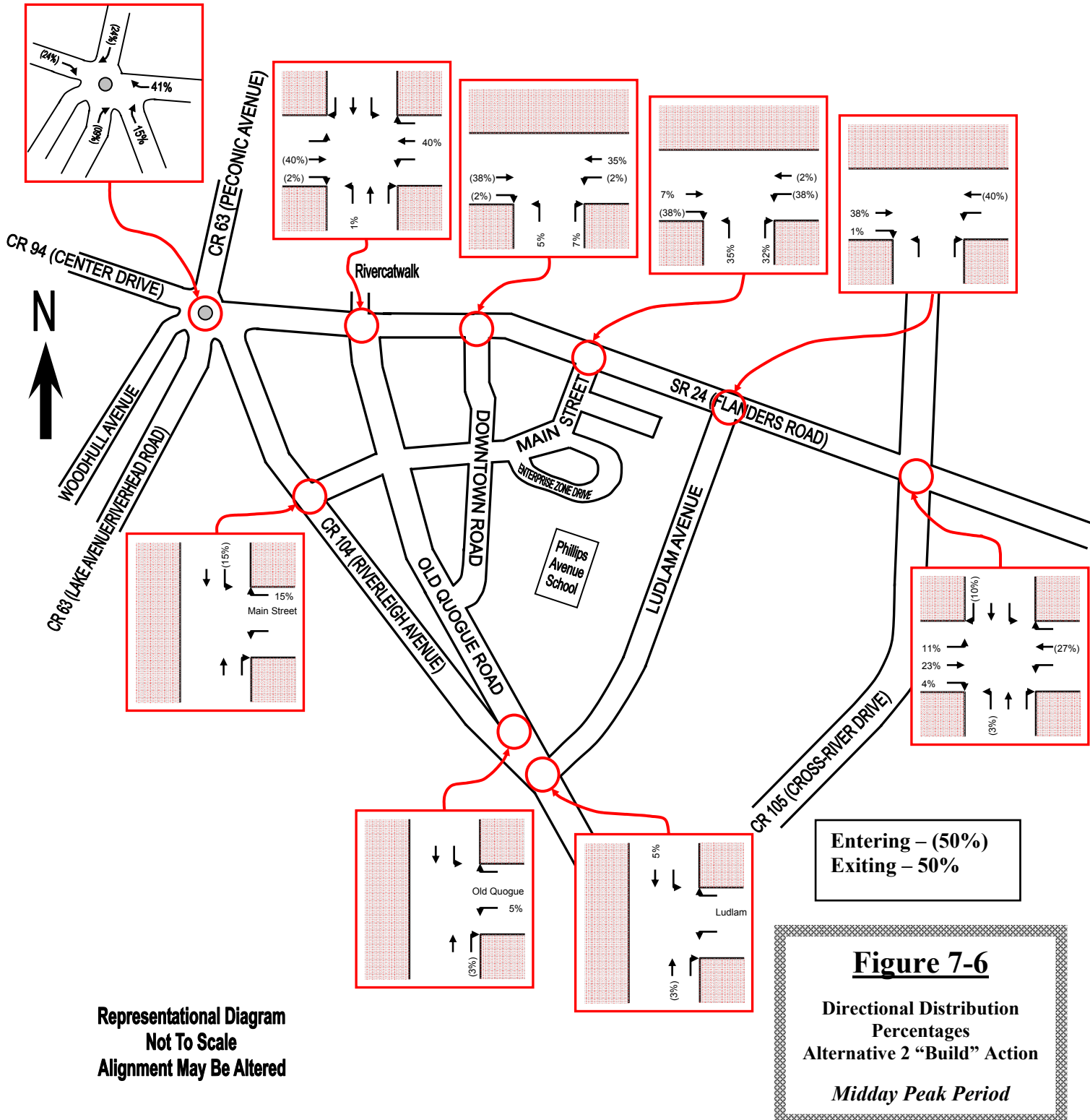
Representational Diagram  
Not To Scale  
Alignment May Be Altered

**Figure 7-5a**  
Directional Distribution  
Percentages  
Alternative 2 “Build” Action  
AM Peak Period



# DIRECTIONAL DISTRIBUTION

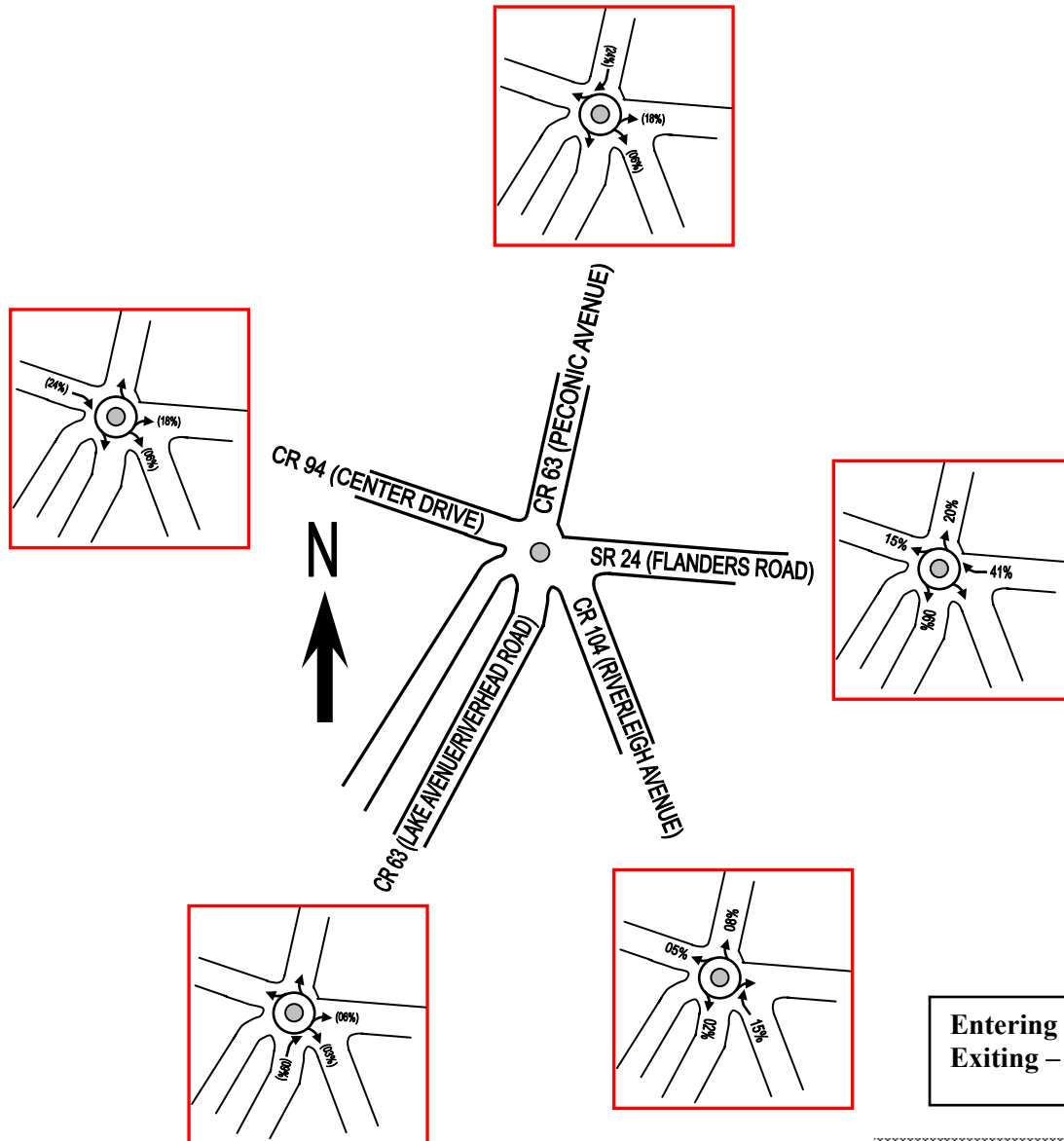
## Riverside M.U.P.D.D. Alternative 2 Action





## DIRECTIONAL DISTRIBUTION

### Riverside M.U.P.D.D. Alternative 2 Action Traffic Circle Movements

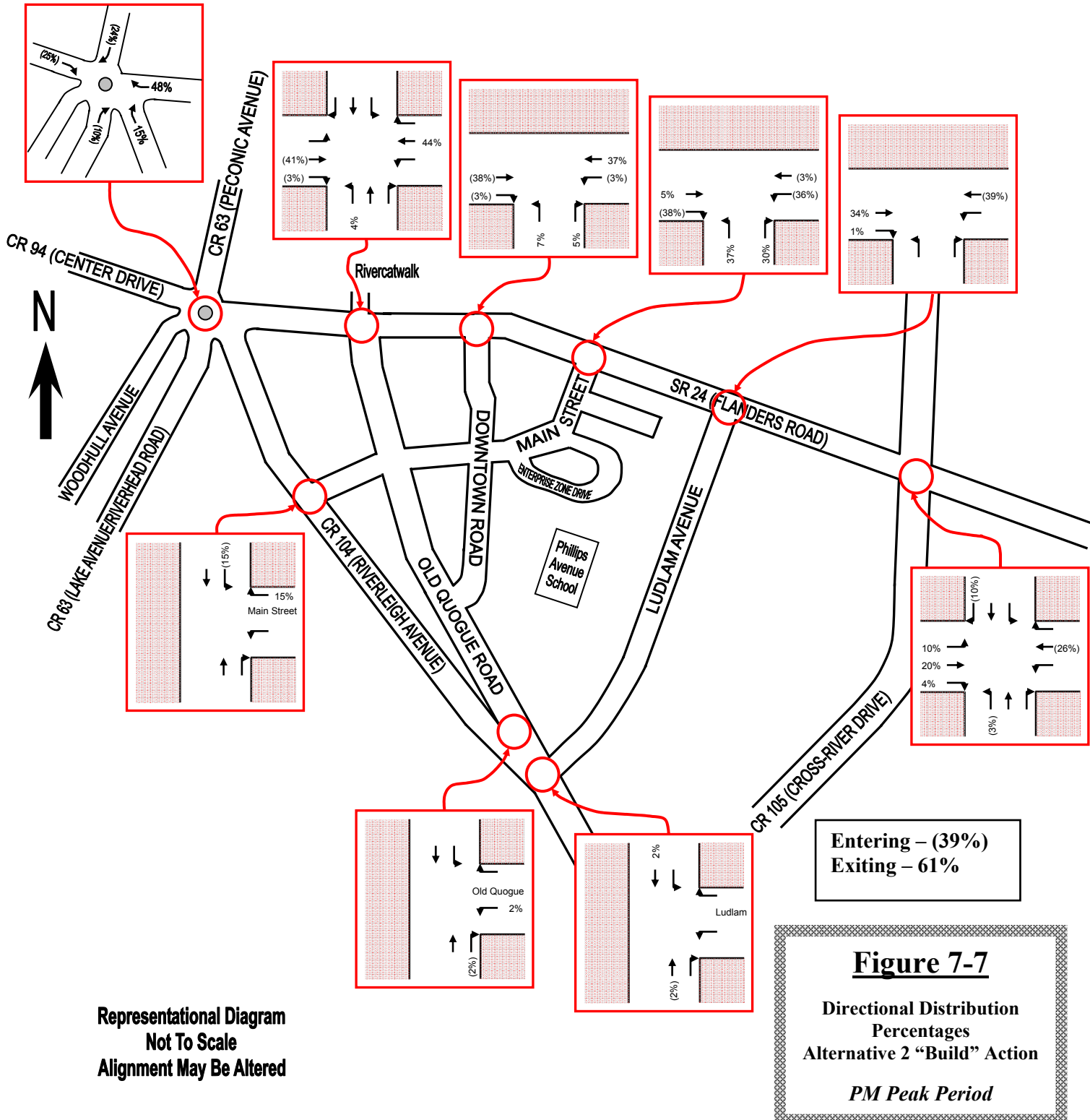


Representational Diagram  
Not To Scale  
Alignment May Be Altered

**Figure 7-6a**  
Directional Distribution  
Percentages  
Alternative 2 “Build” Action  
Midday Peak Period

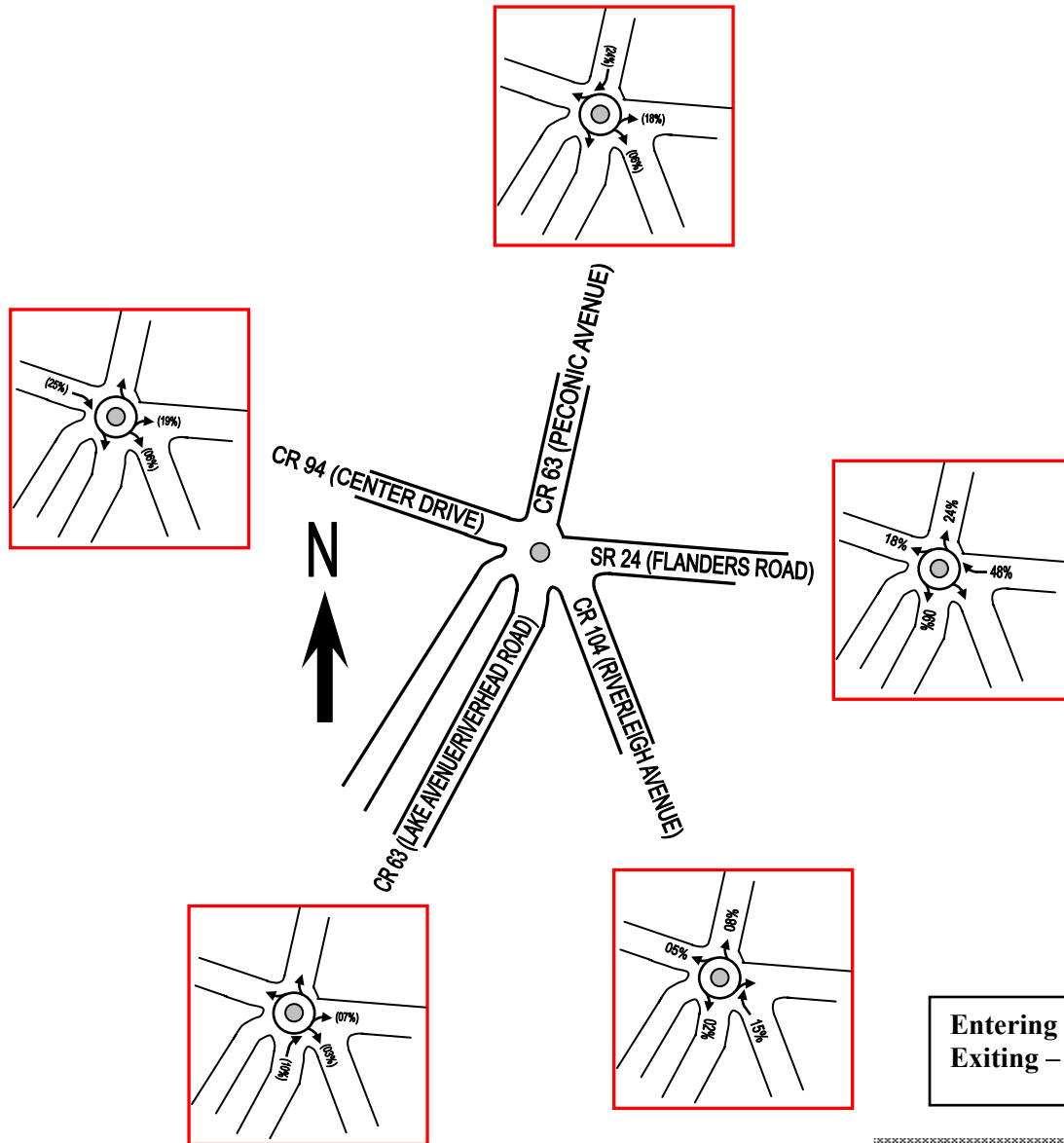
# DIRECTIONAL DISTRIBUTION

## Riverside M.U.P.D.D. Alternative 2 Action



# DIRECTIONAL DISTRIBUTION

## Riverside M.U.P.D.D. Alternative 2 Action Traffic Circle Movements

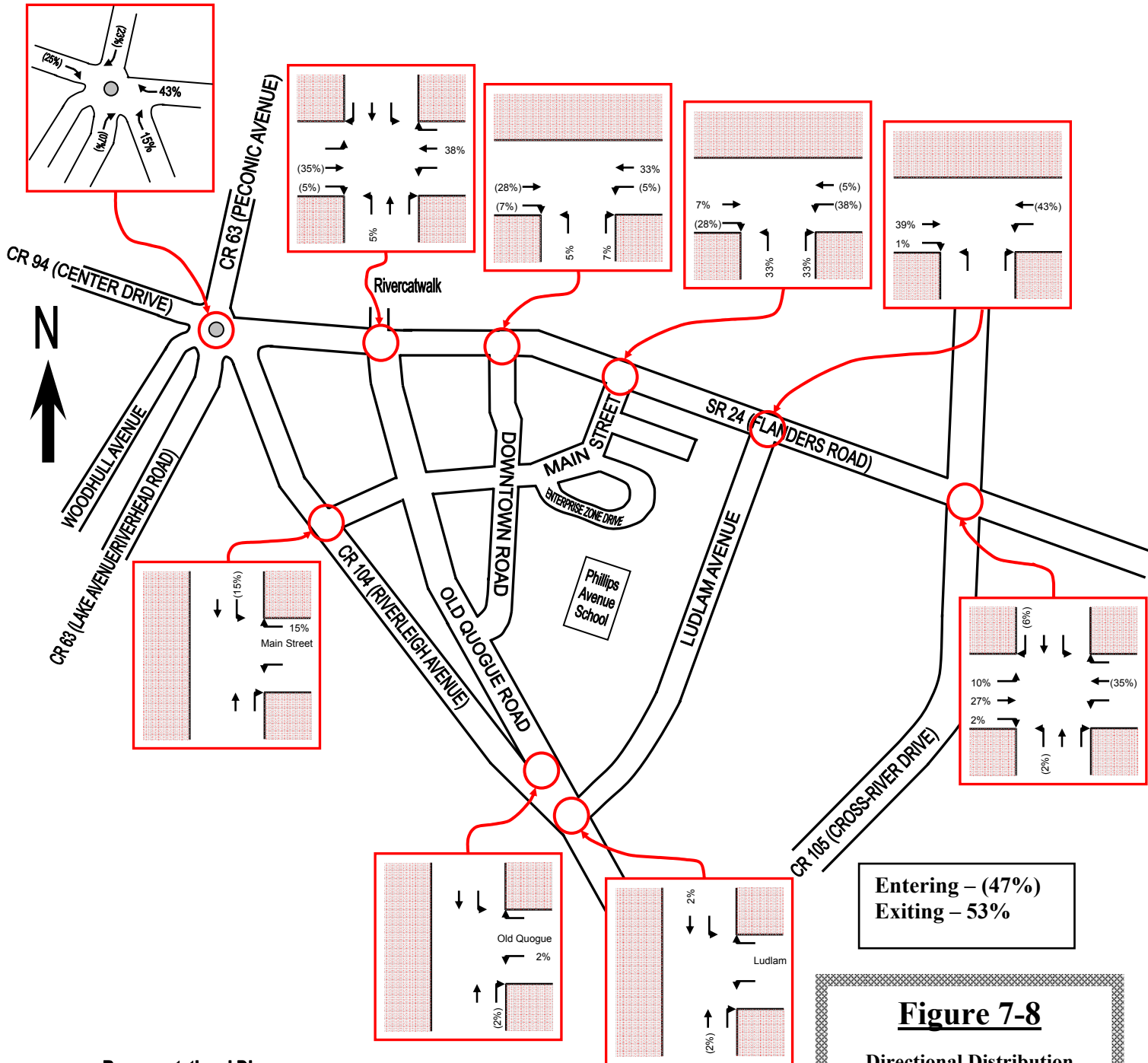


Representational Diagram  
Not To Scale  
Alignment May Be Altered

**Figure 7-7a**  
Directional Distribution  
Percentages  
Alternative 2 “Build” Action  
PM Peak Period

# DIRECTIONAL DISTRIBUTION

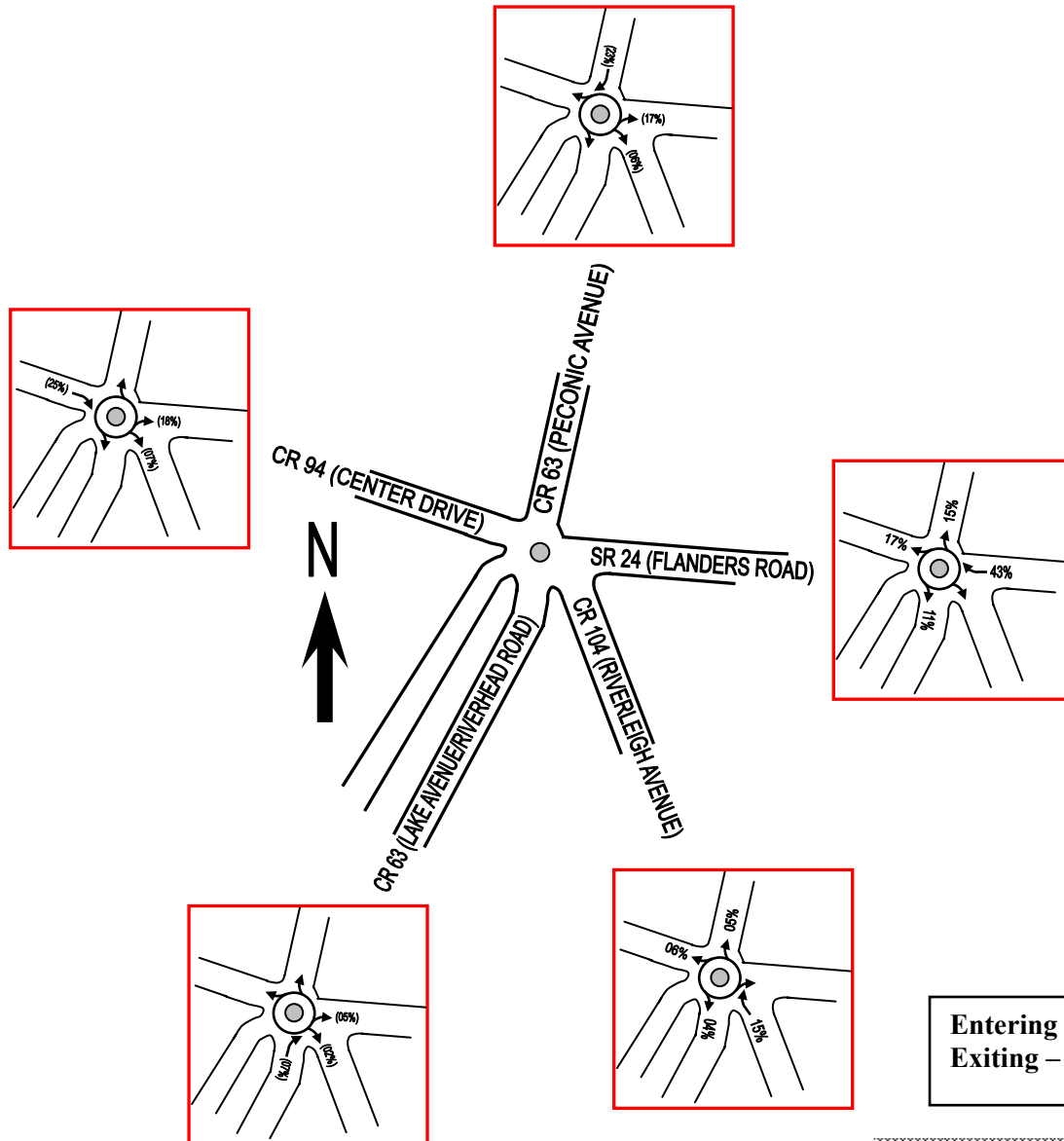
## Riverside M.U.P.D.D. Alternative 2 Action



Representational Diagram  
Not To Scale  
Alignment May Be Altered

# DIRECTIONAL DISTRIBUTION

## Riverside M.U.P.D.D. Alternative 2 Action Traffic Circle Movements

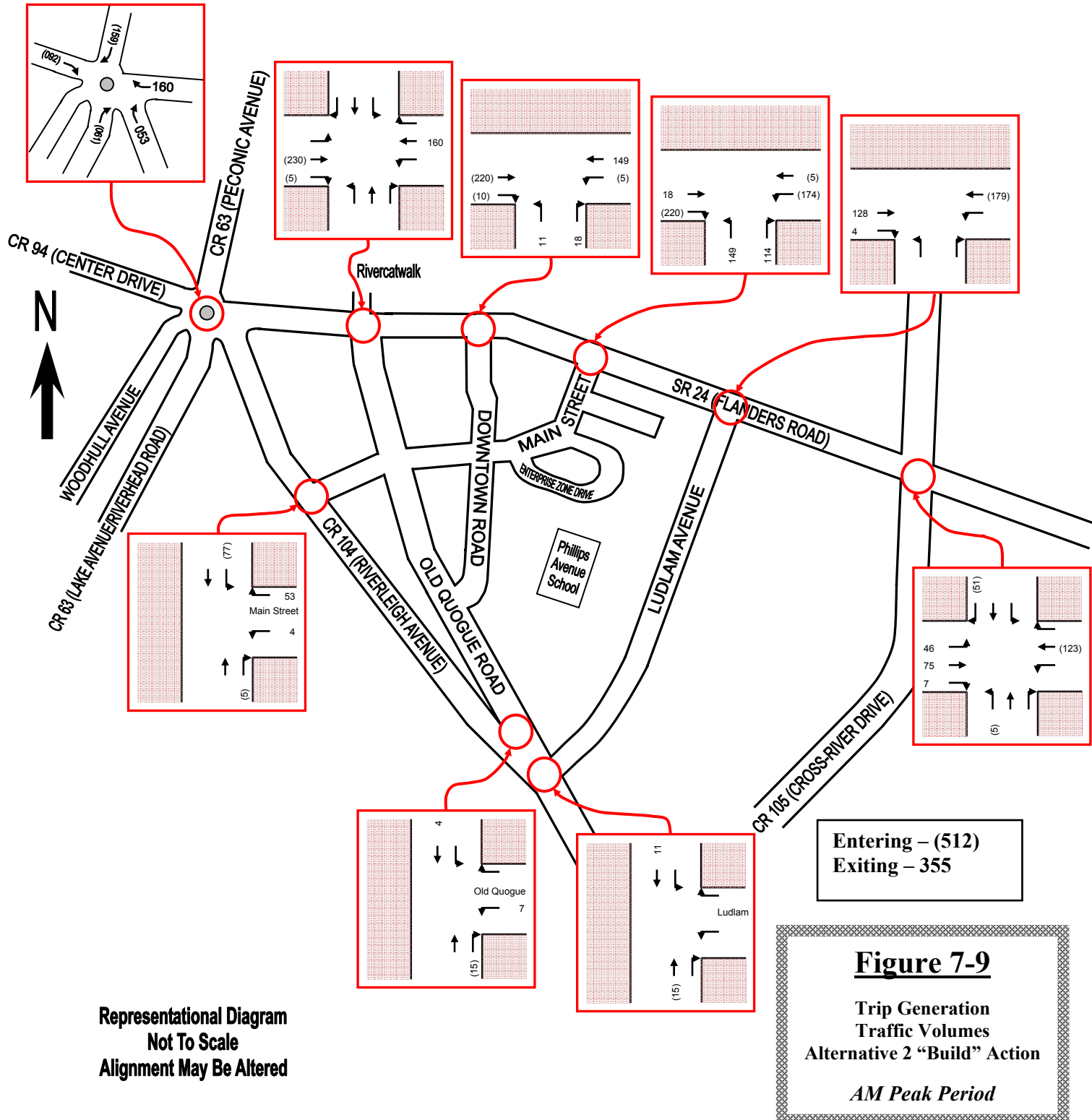


Representational Diagram  
Not To Scale  
Alignment May Be Altered

**Figure 7-8a**  
Directional Distribution  
Percentages  
Alternative 2 “Build” Action  
Saturday Peak Period

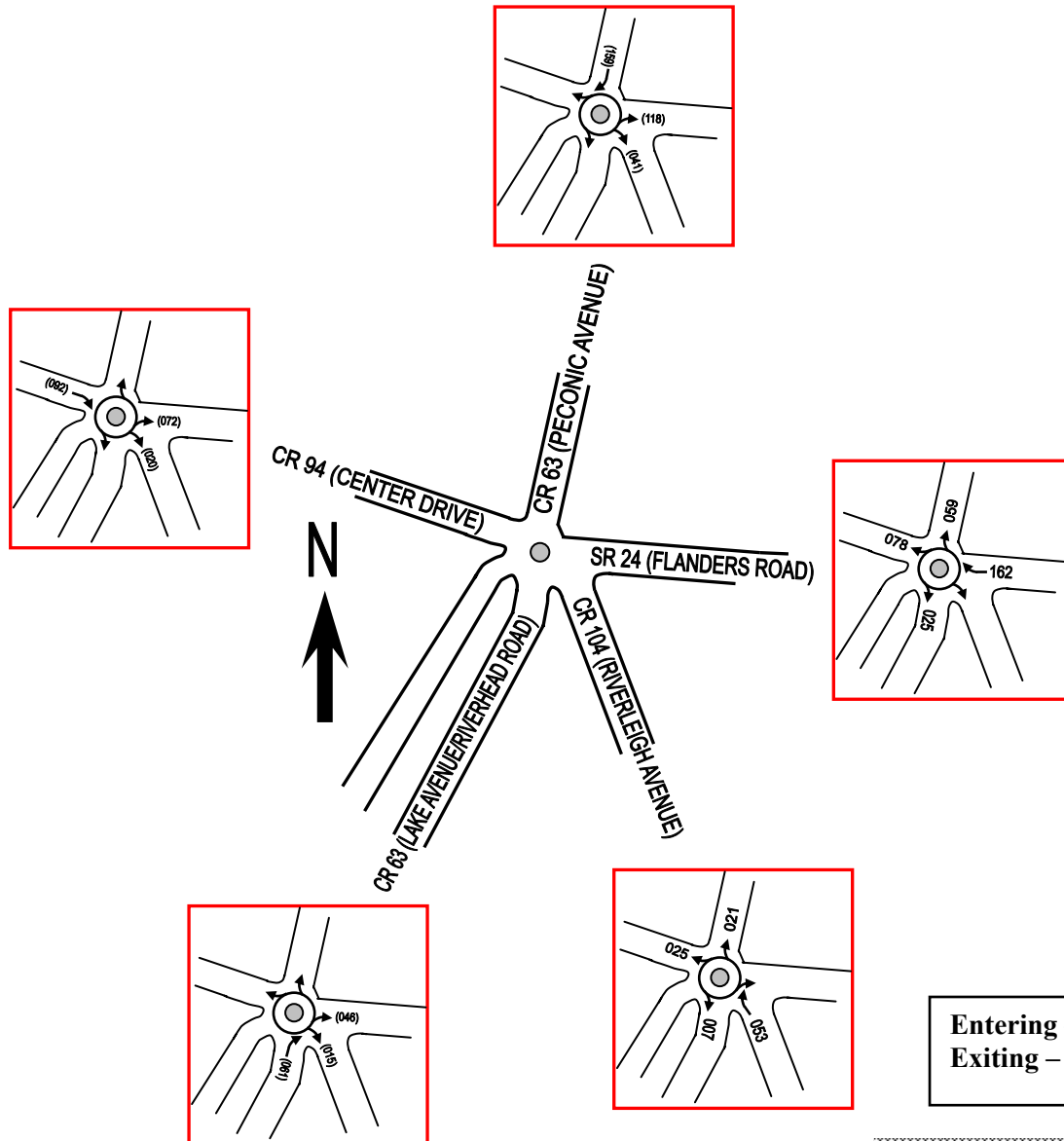
# TRIP GENERATION TRAFFIC VOLUMES

## Riverside M.U.P.D.D. Alternative 2 Action



# TRIP GENERATION TRAFFIC VOLUMES

## Riverside M.U.P.D.D. Alternative 2 Action Traffic Circle Movements



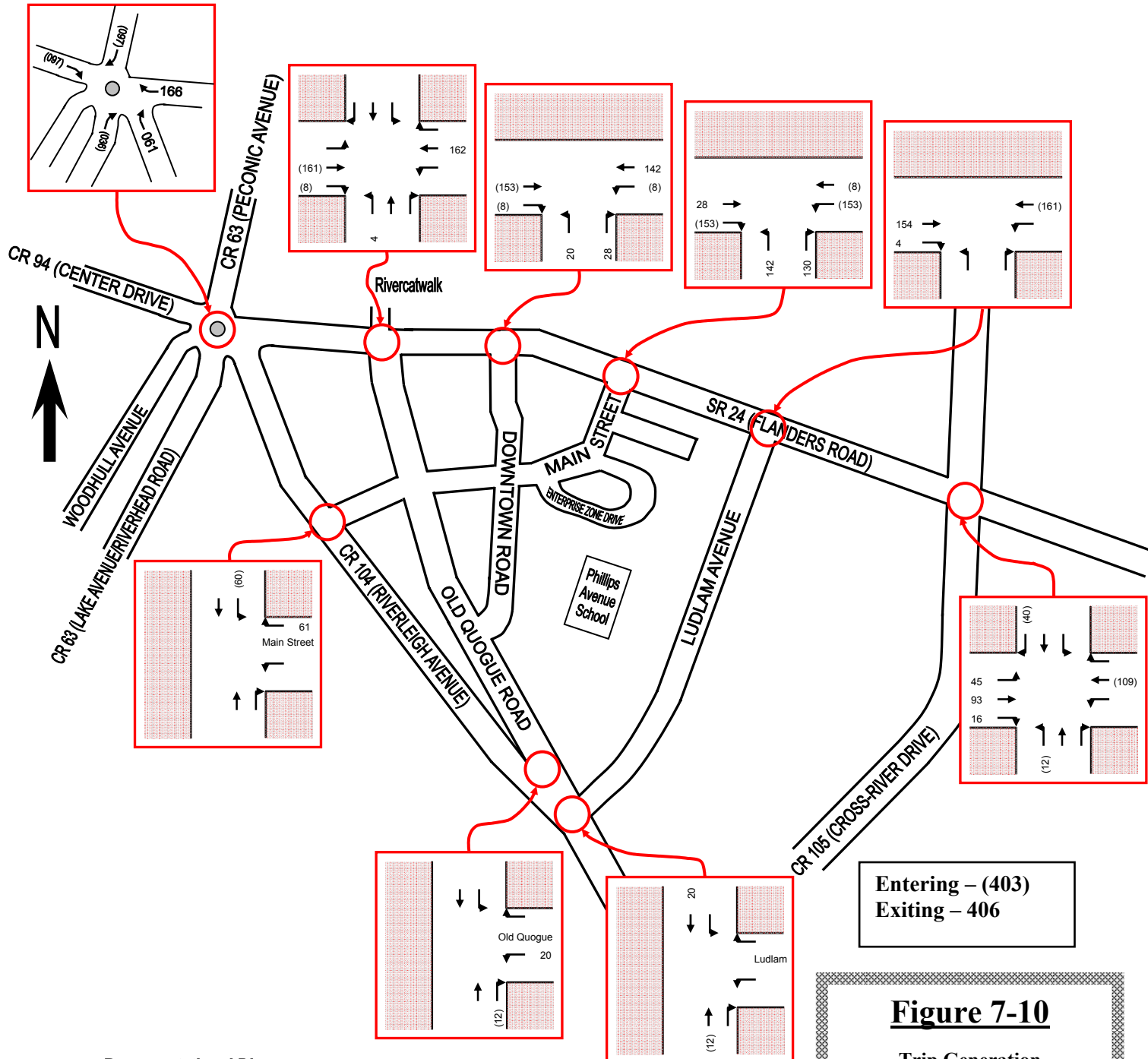
Representational Diagram  
Not To Scale  
Alignment May Be Altered

**Figure 7-9a**  
Trip Generation  
Traffic Volumes  
Alternative 2 “Build” Action  
AM Peak Period



# TRIP GENERATION TRAFFIC VOLUMES

## Riverside M.U.P.D.D. Alternative 2 Action



Representational Diagram  
Not To Scale  
Alignment May Be Altered

Entering – (403)  
Exiting – 406

### Figure 7-10

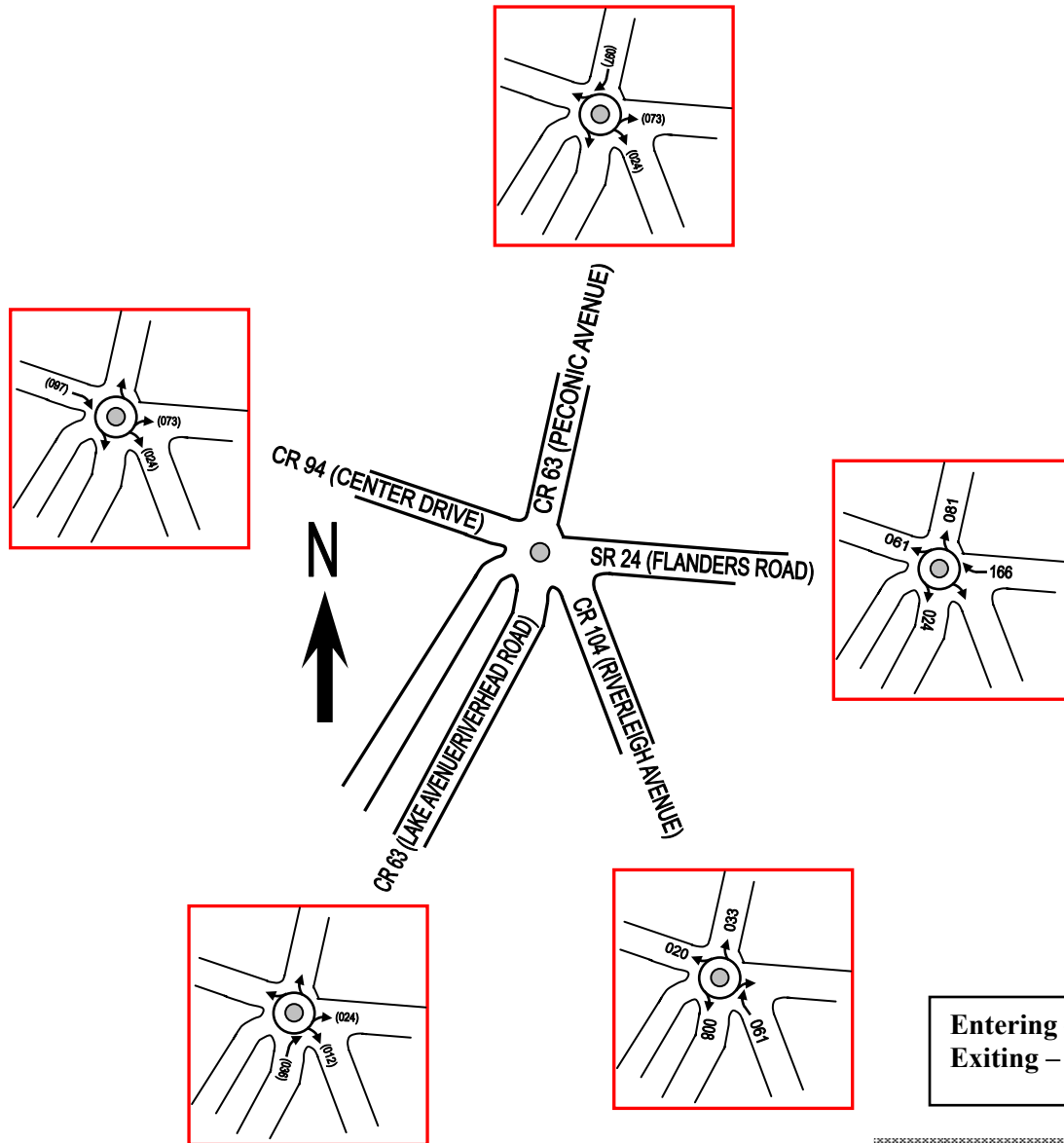
Trip Generation  
Traffic Volumes  
Alternative 2 “Build” Action

*Midday Peak Period*



# TRIP GENERATION TRAFFIC VOLUMES

## Riverside M.U.P.D.D. Alternative 2 Action Traffic Circle Movements



Representational Diagram  
Not To Scale  
Alignment May Be Altered

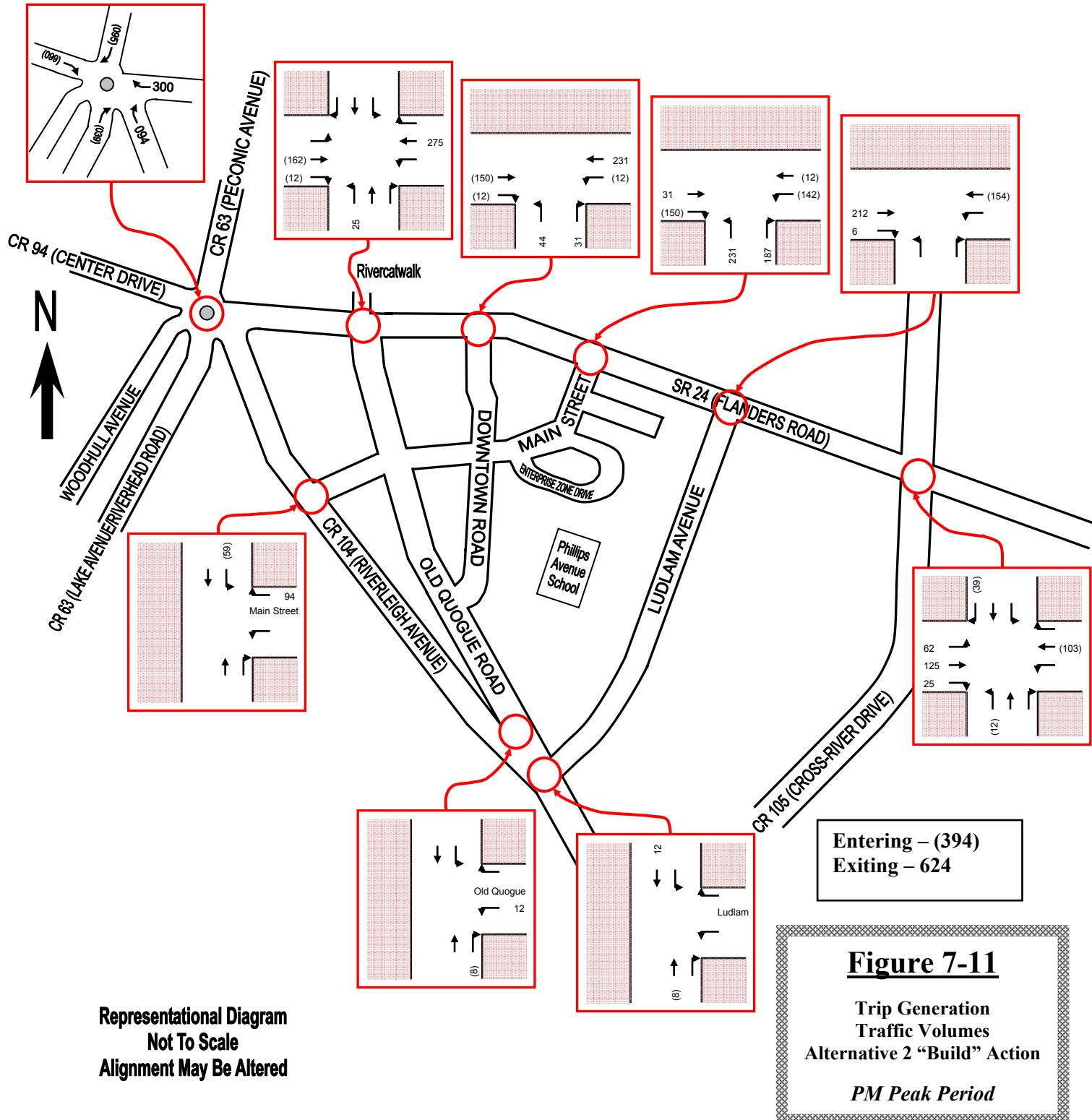
### **Figure 7-10a**

Trip Generation  
Traffic Volumes  
Alternative 2 "Build" Action

*Midday Peak Period*

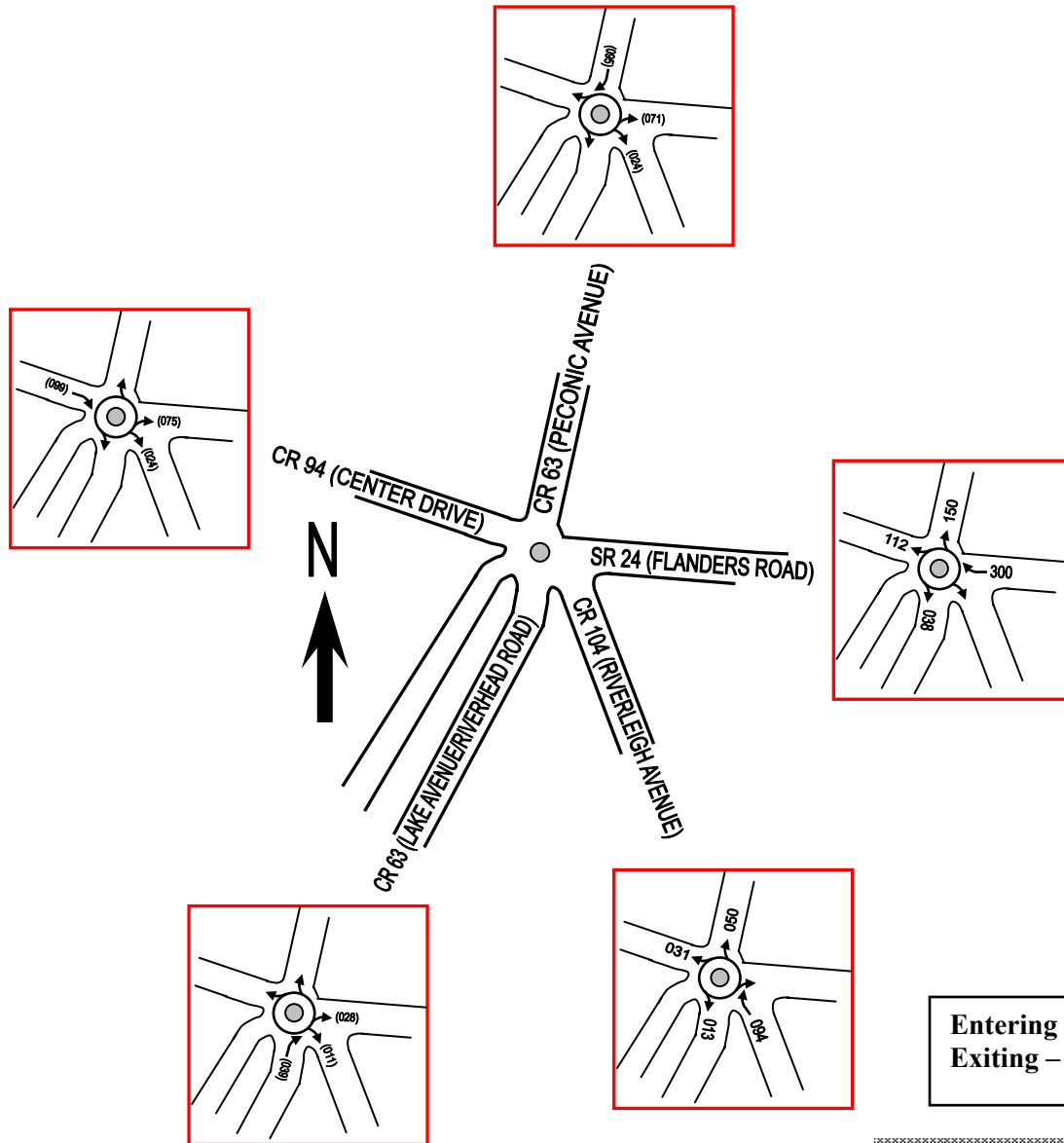
# TRIP GENERATION TRAFFIC VOLUMES

## Riverside M.U.P.D.D. Alternative 2 Action



# TRIP GENERATION TRAFFIC VOLUMES

## Riverside M.U.P.D.D. Alternative 2 Action Traffic Circle Movements



Representational Diagram  
Not To Scale  
Alignment May Be Altered

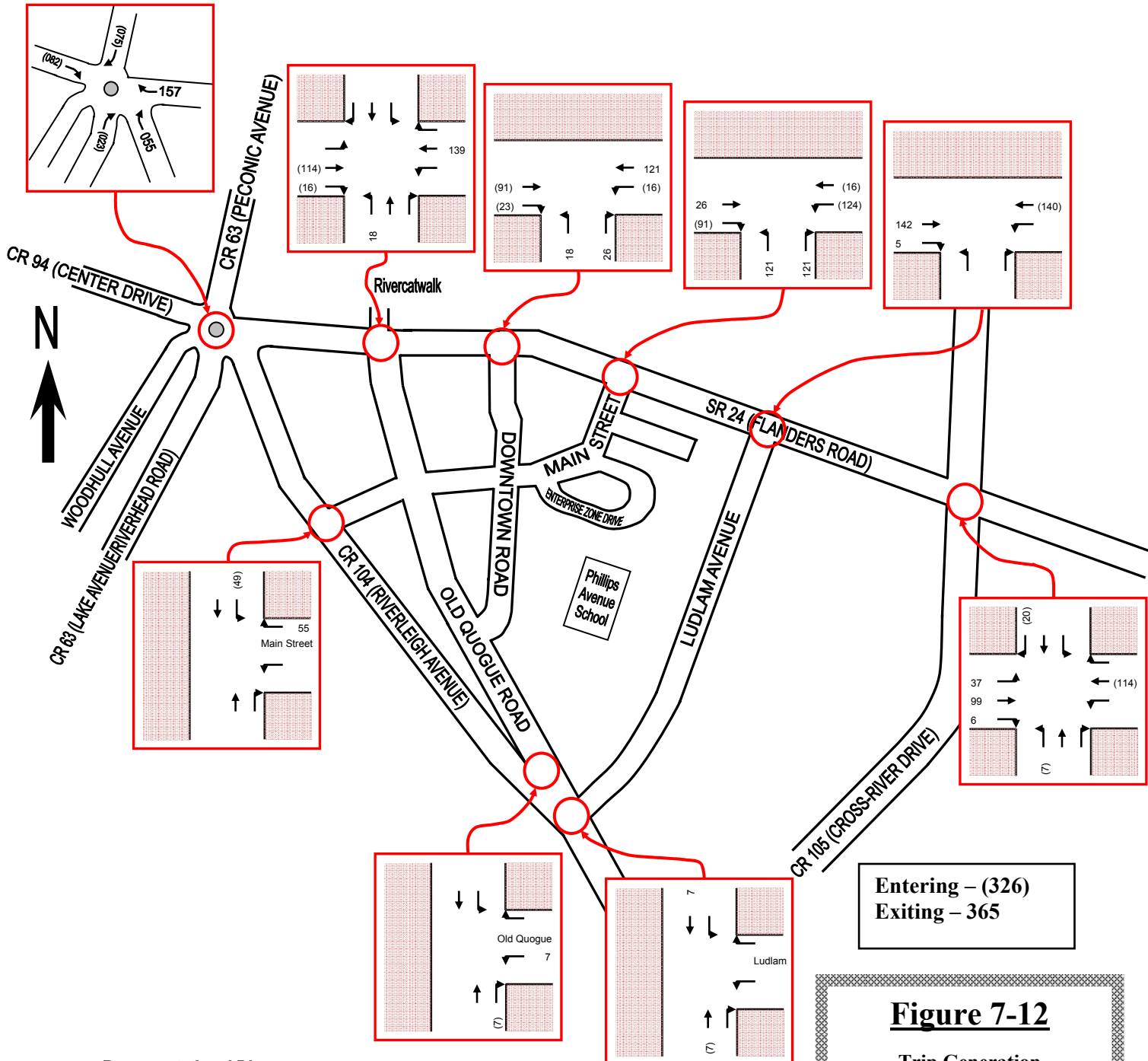
**Figure 7-11a**

Trip Generation  
Traffic Volumes  
Alternative 2 “Build” Action

*PM Peak Period*

# TRIP GENERATION TRAFFIC VOLUMES

## Riverside M.U.P.D.D. Alternative 2 Action

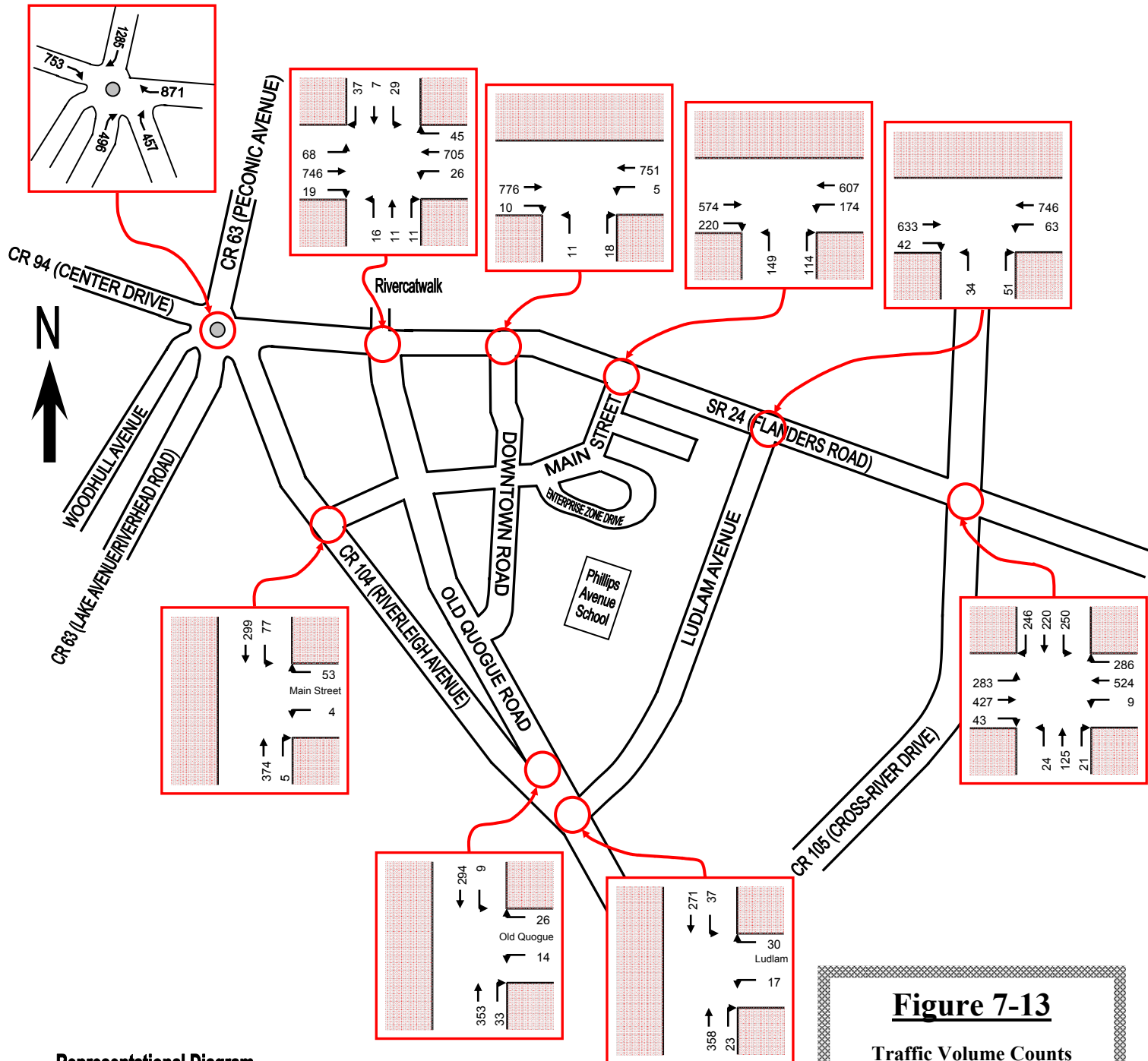


Representational Diagram  
Not To Scale  
Alignment May Be Altered



# TRAFFIC VOLUME COUNTS

## Riverside M.U.P.D.D. 2012 Alternative 2 Build Conditions



Representational Diagram  
Not To Scale  
Alignment May Be Altered

**Figure 7-13**

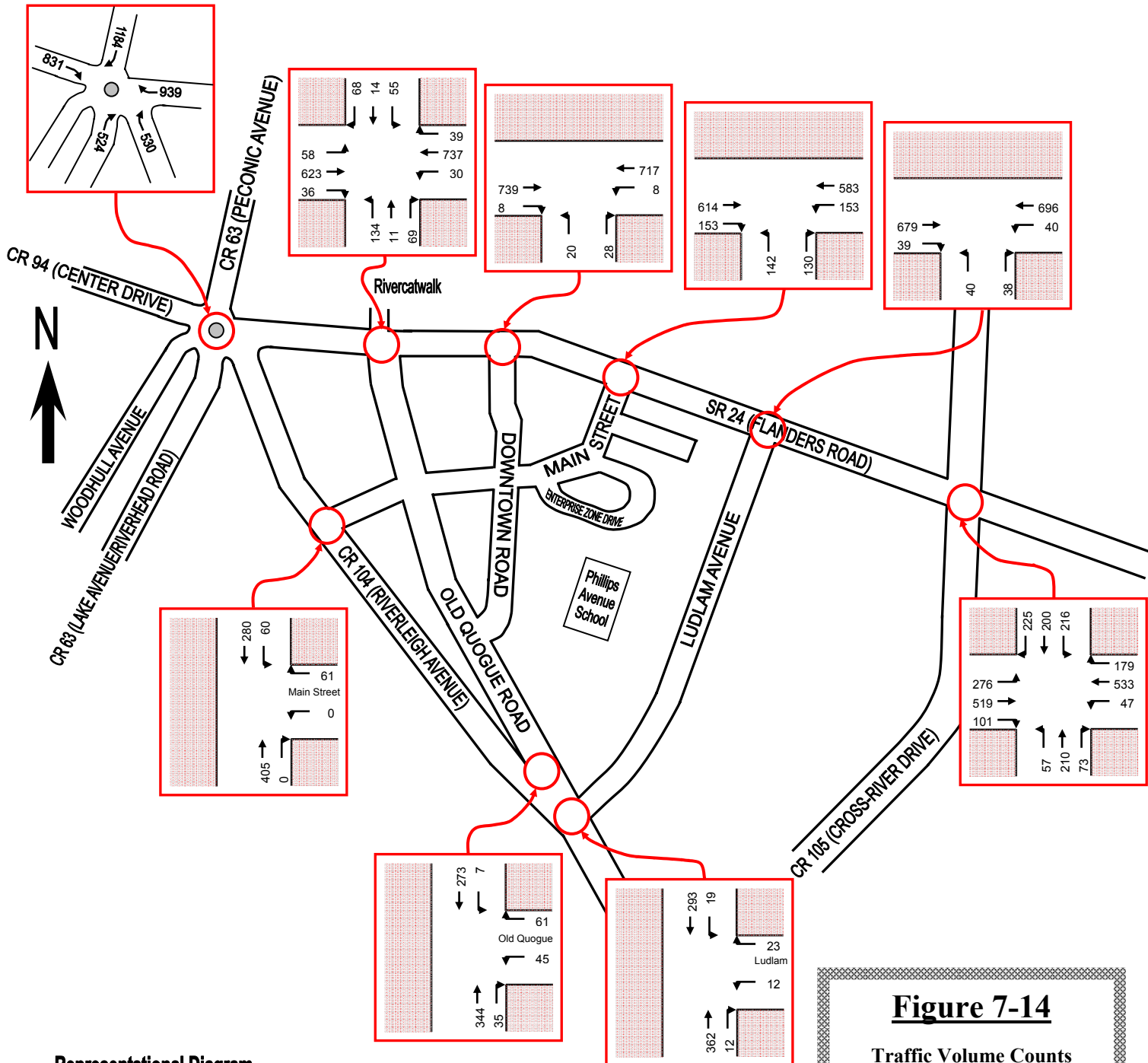
Traffic Volume Counts  
Turning Movements

Alt. 2 Build Conditions  
AM Peak Period



# TRAFFIC VOLUME COUNTS

## Riverside M.U.P.D.D. 2012 Alternative 2 Build Conditions



Representational Diagram  
Not To Scale  
Alignment May Be Altered

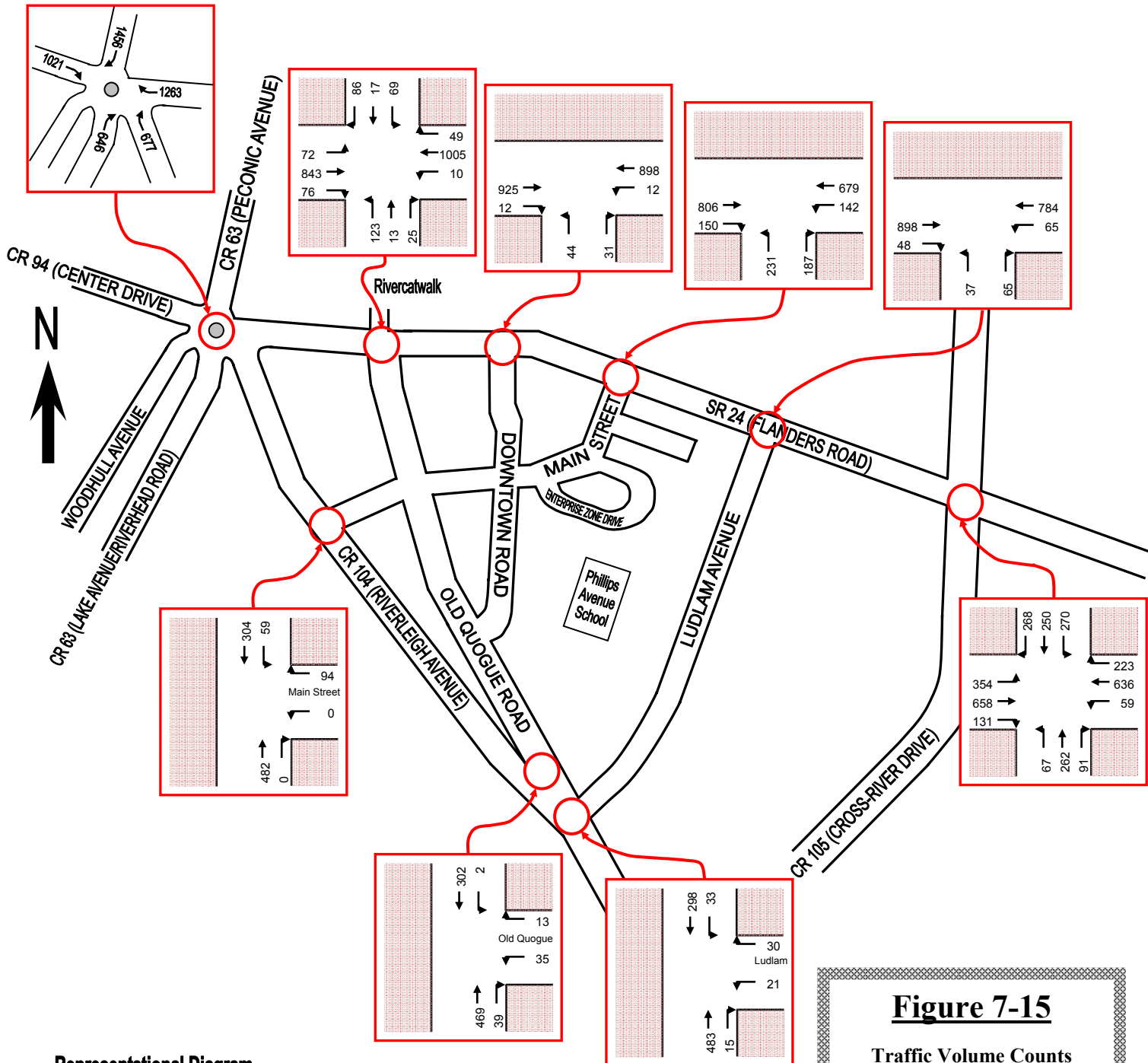
**Figure 7-14**

Traffic Volume Counts  
Turning Movements

Alt. 2 Build Conditions  
Midday Peak Period

# TRAFFIC VOLUME COUNTS

## Riverside M.U.P.D.D. 2012 Alternative 2 Build Conditions



Representational Diagram  
Not To Scale  
Alignment May Be Altered

**Figure 7-15**

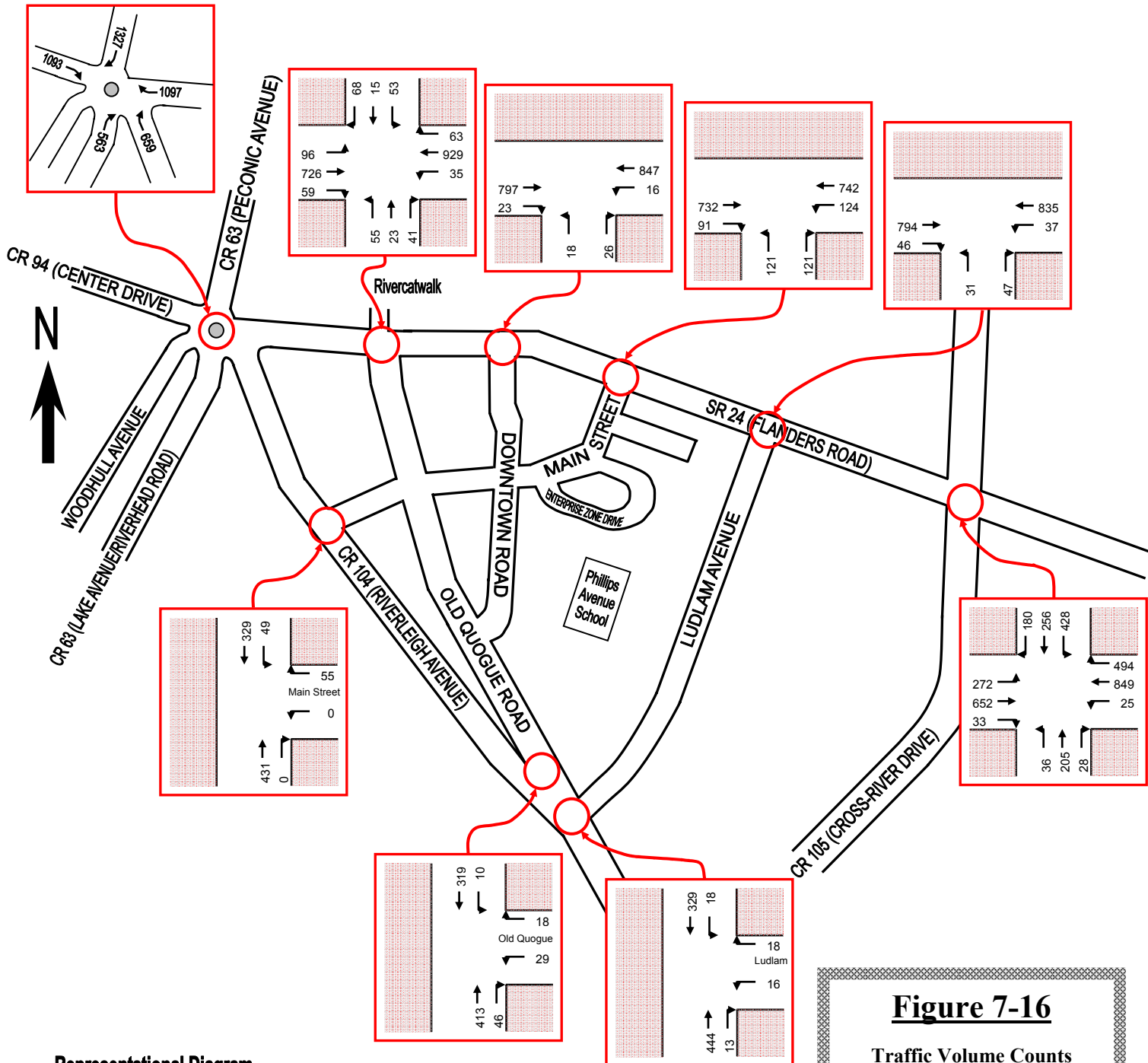
Traffic Volume Counts  
Turning Movements

Alt. 2 Build Conditions  
PM Peak Period



# TRAFFIC VOLUME COUNTS

## Riverside M.U.P.D.D. 2012 Alternative 2 Build Conditions



Representational Diagram  
Not To Scale  
Alignment May Be Altered

**Figure 7-16**

Traffic Volume Counts  
Turning Movements

Alt. 2 Build Conditions  
Saturday Peak Period

**TABLE 7-2: ALTERNATIVE 2 BUILD INTERSECTIONAL LEVELS OF SERVICE**

(Includes Alternative 1 Build)

Riverside MUPDD

Intersection	Control	Movement / Approach	Weekday AM Peak Hour				Weekday Midday Peak Hour				Weekday PM Peak Hour				Saturday Midday Peak Hour			
			Overall	LOS	Delay	v/c	Overall	LOS	Delay	v/c	Overall	LOS	Delay	v/c	Overall	LOS	Delay	v/c
Riverhead Traffic Circle (SR 24, CR 94, CR 104, CR 63, & Peconic Avenue Intersection)	Roundabout Stop Signs	NB CR 63		F	370.2	1.69		F	975.8	2.96		F	2125.1	4.53		F	1895.4	3.94
		NWB CR 104		F	328.9	1.58		F	1924.7	4.03		F	2405.5	5.13		F	2186.7	4.64
		WB SR 24		F	312.3	1.64		F	578.0	2.22		F	1894.7	5.11		F	1981.7	5.26
		SB Peconic		F	497.8	2.07		F	451.6	1.96		F	916.6	4.29		F	1509.3	4.29
		EB CR 94		F	262.0	1.53		F	8534.3	19.93		F	14142.4	32.38		F	22867.8	51.69
SR 24 (Flanders Road) at CR 105 (Cross River Drive)	Traffic Signal	EB-L		D	52.6	0.92		E	59.3	0.95		F	94.7	1.06		E	66.2	0.93
		EB-T		B	18.5	0.54		C	20.6	0.65		B	17.6	0.67		B	15.6	0.62
		EB-R		B	13.7	0.05		B	14.3	0.14		B	11.0	0.14		A	9.4	0.03
		WB-L		C	20.2	0.03		C	21.8	0.20		C	20.7	0.26		B	17.2	0.09
		WB-T		D	40.2	0.87		D	43.0	0.89		D	35.3	0.84		E	68.8	1.03
		WB-R		C	23.8	0.43		C	22.2	0.27		C	20.5	0.28		C	24.4	0.62
		NB-L		B	19.1	0.18		B	19.4	0.12		C	27.2	0.19		C	32.2	0.13
		NB-T		C	24.6	0.06		C	25.1	0.22		C	34.8	0.36		D	39.8	0.37
		NB-R		C	23.9	0.06		C	24.8	0.17		C	34.5	0.29		D	37.8	0.11
		SB-L		B	18.4	0.33		B	18.5	0.43		C	26.6	0.43		D	41.2	0.74
		SB-T		C	22.8	0.20		C	22.8	0.19		C	32.2	0.32		D	36.5	0.34
		SB-R		C	25.3	0.44		C	25.2	0.43		D	40.3	0.69		D	38.4	0.47
SR 24 (Flanders Road) at Ludlam Avenue	Side Street Stop Sign	WB-L		A	9.7	0.09		E				F	11.1	0.10		B	10.0	0.05
		NB-LR		E	49.8	0.60		E	36.0	0.45		F	141.6	1.03		E	44.0	0.49
SR 24 (Flanders Road) at Main Street	Side Street Stop Sign	WB-L		B	11.1	0.24		B	10.7	0.21		B	12.0	0.23		B	10.8	0.18
		NB-L		F	570.2	1.99		F	461.0	1.75		F	1678.0	4.40		F	608.9	2.02
		NB-R		B	14.9	0.25		C	16.3	0.31		D	28.9	0.58		C	18.9	0.34
SR 24 (Flanders Road) at Downtown Road	Side Street Stop Sign	WB-L		A	9.6	0.02		A	9.5	0.03		B	10.4	0.06		A	9.8	0.02
		NB-L		E	43.3	0.34		E	42.8	0.63		D	30.2	0.94		F	60.8	0.23
		NB-R		C	15.4	0.16		C	15.2	0.25		C	18.8	0.38		C	16.1	0.08
SR 24 (Flanders Road) at Old Quogue Road	Side Street Stop Sign	EB-L		B	10.2	0.09		B	10.4	0.09		B	11.5	0.13		B	11.4	0.17
		WB-L		A	9.7	0.04		A	9.5	0.04		B	10.2	0.01		A	10.0	0.05
		NB-LR		C	22.1	0.16		F	199.6	1.26		F	661.8	2.22		F	226.7	1.23
		SB-L		C	23.4	0.14		D	33.3	0.32		E	44.7	0.46		F	74.1	0.54
		SB-T		C	18.4	0.03		C	18.5	0.05		C	21.9	0.08		D	25.2	0.08
		SB-R		C	16.0	0.11		C	18.1	0.21		C	24.4	0.34		C	20.0	0.23
CR 104 (Riverleigh Avenue) at Ludlam Avenue	Side Street Stop Sign	SB-L		A	8.3	0.03		A	8.2	0.02		A	8.6	0.04		A	8.3	0.02
		WB-LR		B				B				C				B		
		SB-L		A	8.2	0.01		A	8.1	0.01		C	15.2	0.09		B	13.9	0.06
CR 104 (Riverleigh Avenue) at Old Quogue Road	Side Street Stop Sign	SWB-L		B	14.9	0.07		B	16.5	0.23		C	18.8	0.14		A	8.3	0.01
		SWB-R		B	11.8	0.09		B	11.6	0.19		C	11.4	0.03		C	16.2	0.11
		SB-L		A	8.4	0.07		A	8.4	0.06		A	8.7	0.06		B	11.1	0.04
CR 104 (Riverleigh Avenue) at Main Street	Side Street Stop Sign	WB-LR		B	11.7	0.1		B	11.5	0.11		B	13.0	0.18		A	8.5	0.05
																B	11.7	0.1

L=Left

T=Through

R=Right

LOS = Level of Service

Delay = Delay in Seconds/Vehicle

v/c = Demand Flow (Volume) to Capacity Ratio

NB = Northbound, SB = Southbound

EB = Eastbound, WB = Westbound

**CR 104 at Main Street**

This is the new intersection formed by the Alternative 2 Build proposal. Capacity analysis shows that the intersection would operate at a highly acceptable LOS B during all peak traffic periods.

**SR 24 at Main Street**

The intersection will experience slight reductions in delays during the peak traffic periods as a result of the proposed alternative, but the reductions will not be significant. No changes in levels of service would result and the benefits to motorists would be negligible.

**State Route 24 at Old Quogue Road/Rivercatwalk Driveway**

Similar to the intersection of SR 24 and Main Street, the intersection will experience slight reductions in delays during the peak traffic periods as a result of the proposed alternative, but the reductions will not be significant. No changes in levels of service would result and the benefits to motorists would be negligible.

**7.3 Traffic Volumes and Intersection Capacity – Alternative 3 (New Roadway from the MUPDD site to Ludlam Avenue)**

Alternative 3 is the proposed creation of a new roadway to connect the MUPDD site to Ludlam Avenue north of the Phillips Avenue School. The intended purpose of the new roadway will be to provide an easterly access point to the site, relieve traffic conditions at the newly created intersection of SR 24 and Main Street, and potentially remove trips from SR 24 and move them to CR 104.

**Traffic Volumes (Alternative 3 Scenario)**

Trips from the MUPDD project were re-distributed, to account for the new roadway to Ludlam Avenue, in the manner shown on the Directional Distribution diagrams (Figure 7-17 through Figure 7-20a). The trips, shown on Figure 7-21 through 7-24a, were then

added to No-Build traffic volumes, including the volume modifications generated by both the Alternative 1 and Alternative 2 scenarios, to produce the volumes shown on Figure 7-25 through Figure 7-28.

### **Capacity Analysis and Levels of Service (LOS) for the Alternative 3 Scenario**

Using the methods described in Section 3.2, and in conformance with the procedures described in the *Highway Capacity Manual 2000 (HCM 2000)*, capacity analyses were performed for each of the intersections and for each peak traffic period. The Alternative 3 Build capacity analysis results and levels of service are presented on Table 7-3. Capacity analysis results for individual intersections are provided in Appendix E. A composite level of service table for all of the build alternatives is also provided as Table 7-4.

#### **7.3.1 Results of Intersection Capacity Analysis (Alternative 3 Scenario)**

**The following intersections were impacted by the proposed alternative:**

##### **State Route 24 at Ludlam Avenue**

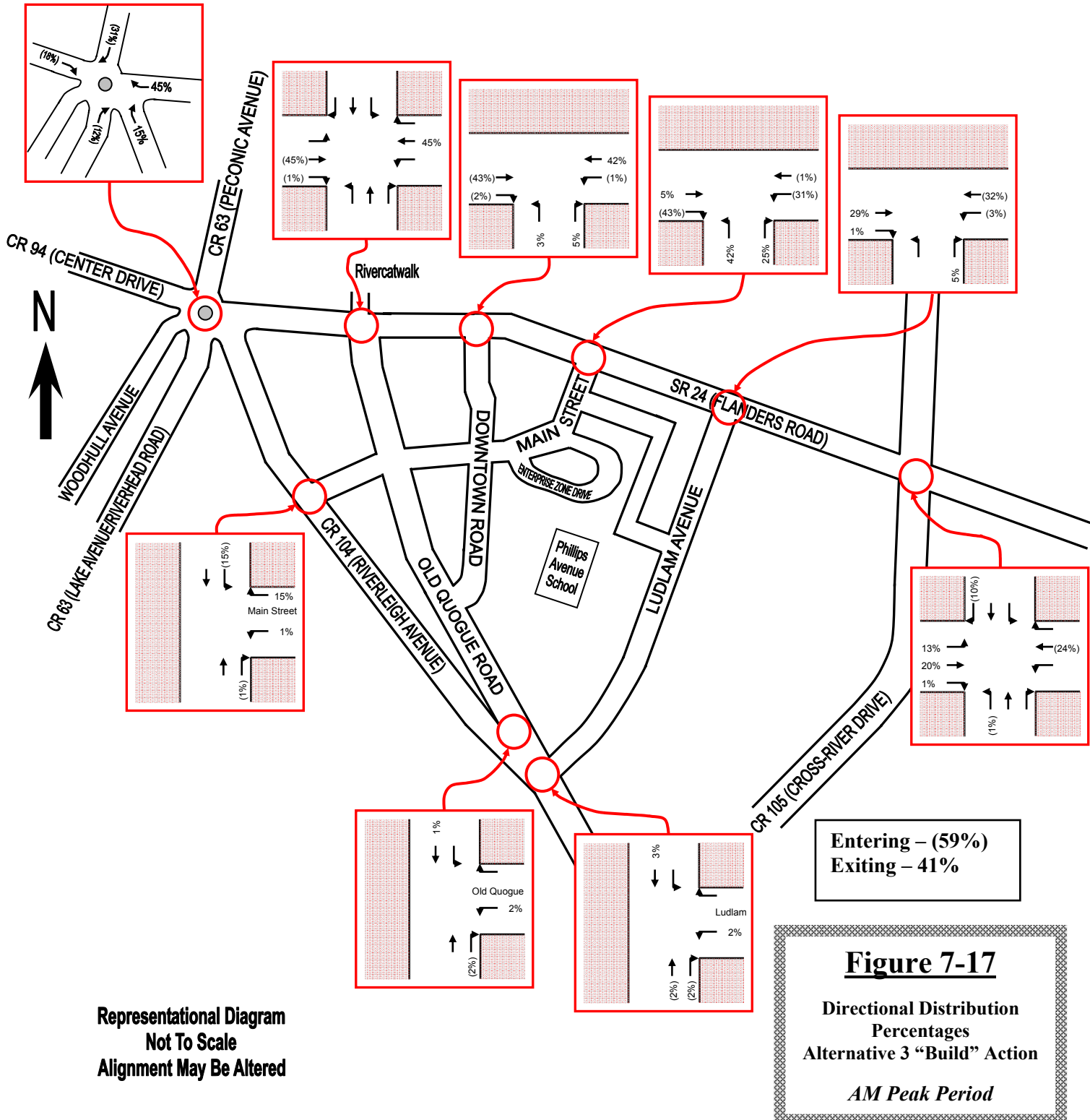
The intersection will experience slightly reduced delays during all peak traffic periods and will improve from a LOS E to a LOS D during the weekday mid-day peak period. Motorists would benefit from the reduced delays, but the improvements would barely be perceptible under typical driving conditions.

##### **County Road 104 at Ludlam Avenue**

Motorists will experience slightly increased delays, especially when attempting to execute westbound left turns. The increased delays will cause a drop in the operational service level, from LOS B to LOS C, during the Saturday mid-day peak traffic period. This diminishment is attributable to motorists deciding to use the CR 104 route instead of the SR 24 route when entering and exiting the MUPDD site. In effect, any improvements at the intersection of SR 24 result in deteriorated traffic conditions at the intersection of CR 104 and Ludlam Avenue.

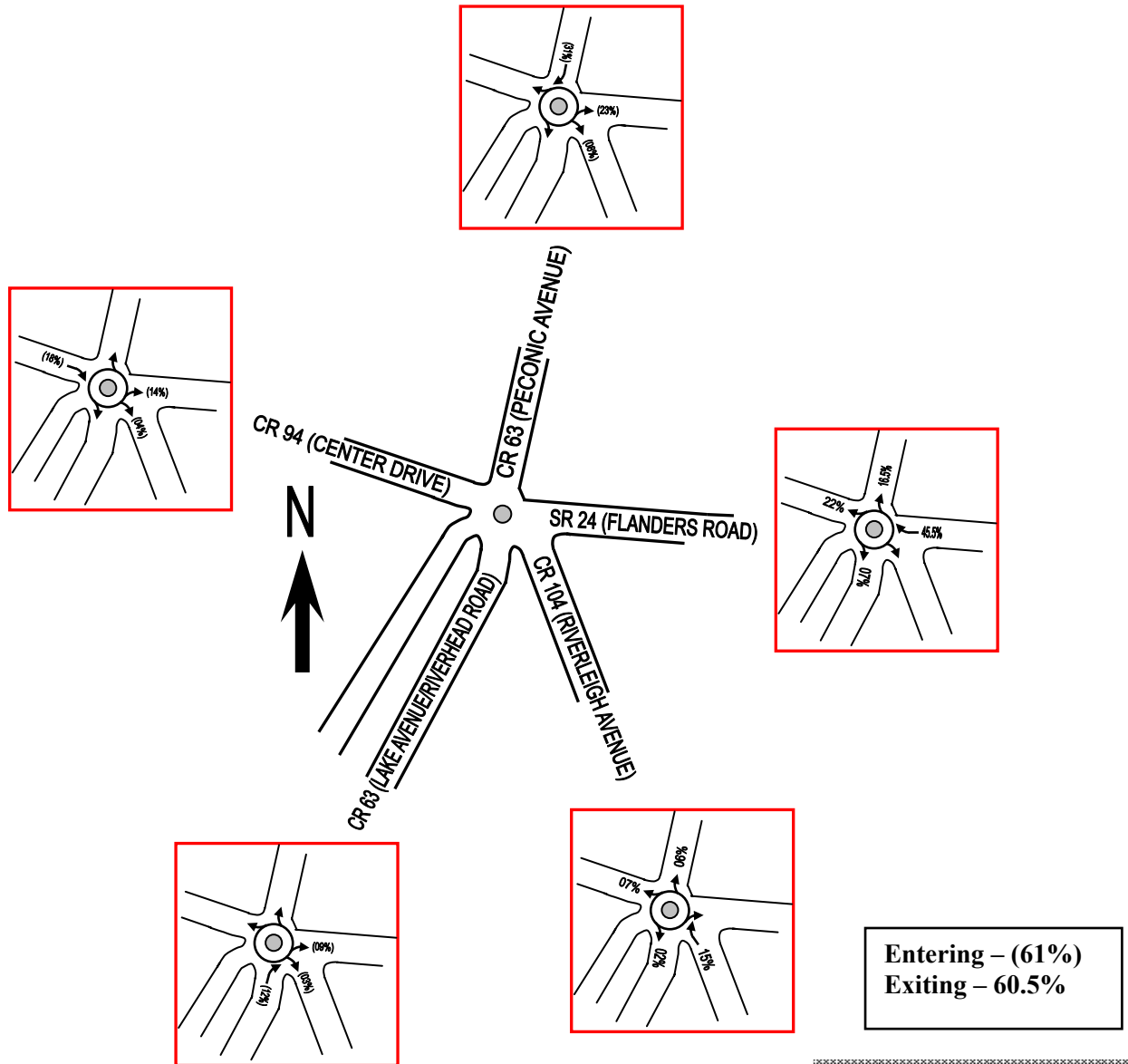
# DIRECTIONAL DISTRIBUTION

## Riverside M.U.P.D.D. Alternative 3 Action



# DIRECTIONAL DISTRIBUTION

## Riverside M.U.P.D.D. Alternative 3 Action Traffic Circle Movements



Representational Diagram  
Not To Scale  
Alignment May Be Altered

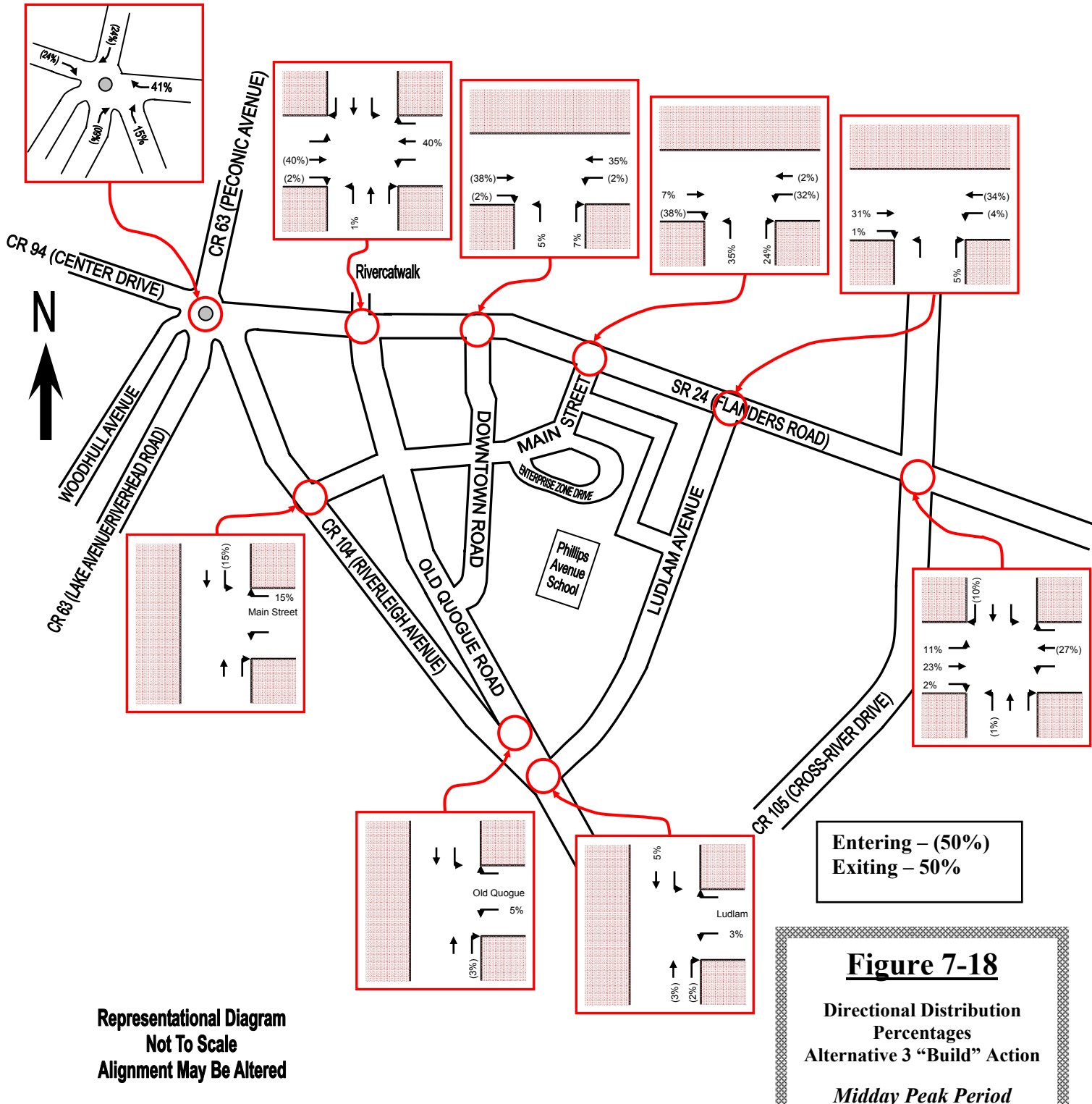
**Figure 7-17a**

Directional Distribution  
Percentages  
Alternative 3 “Build” Action

*AM Peak Period*

# DIRECTIONAL DISTRIBUTION

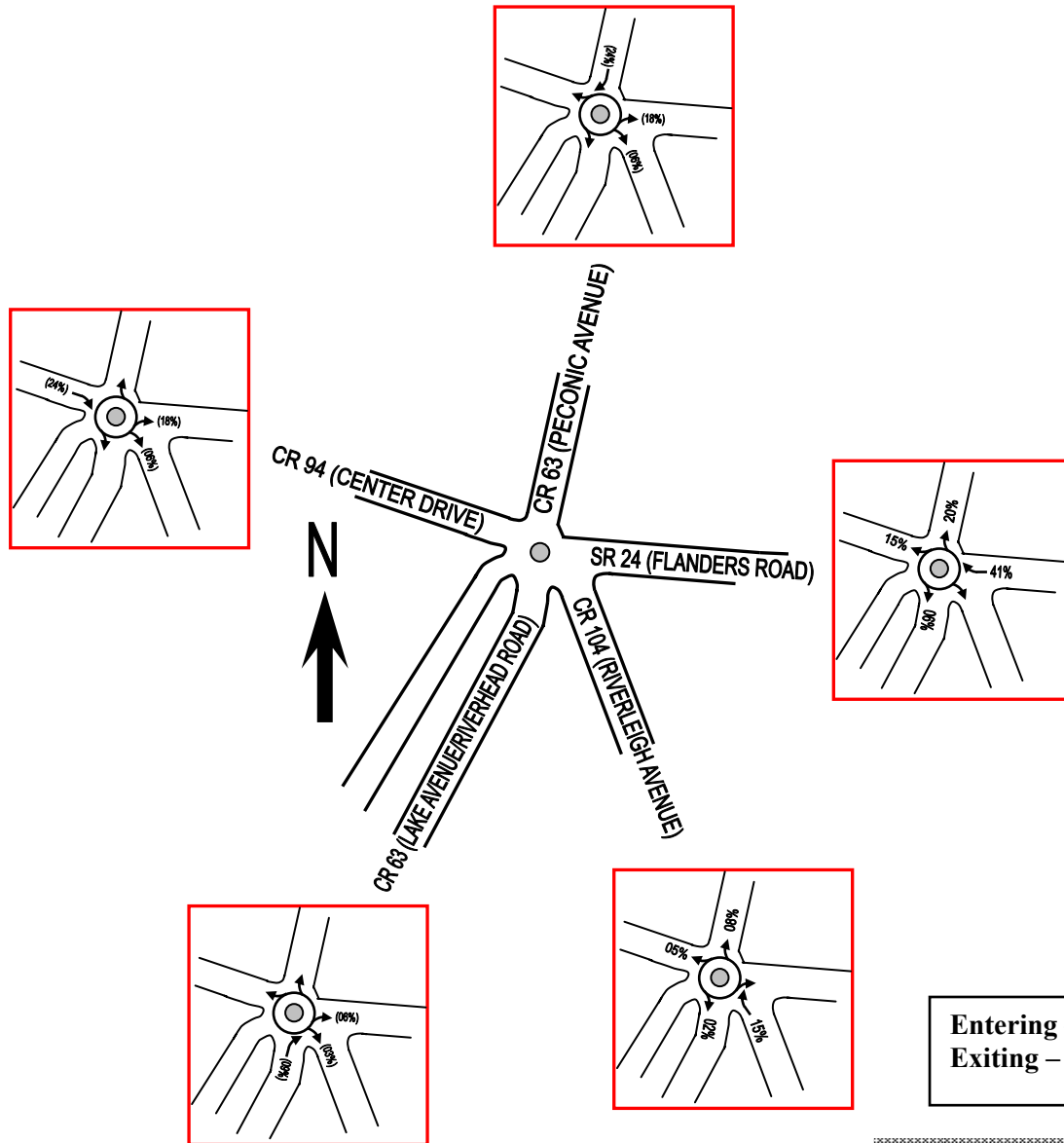
## Riverside M.U.P.D.D. Alternative 3 Action





# DIRECTIONAL DISTRIBUTION

## Riverside M.U.P.D.D. Alternative 3 Action Traffic Circle Movements



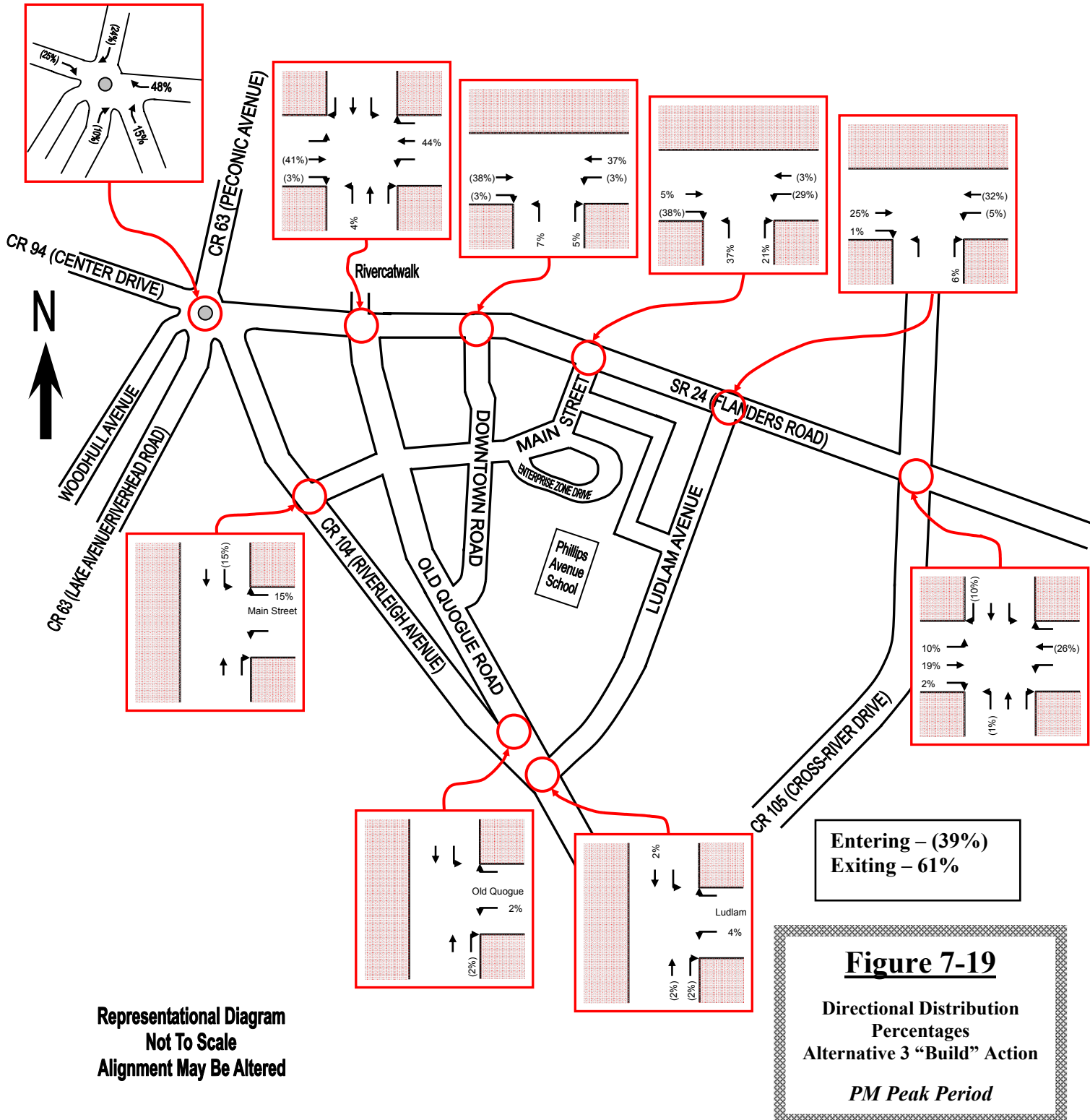
Representational Diagram  
Not To Scale  
Alignment May Be Altered

**Figure 7-18a**  
Directional Distribution  
Percentages  
Alternative 3 “Build” Action  
Midday Peak Period



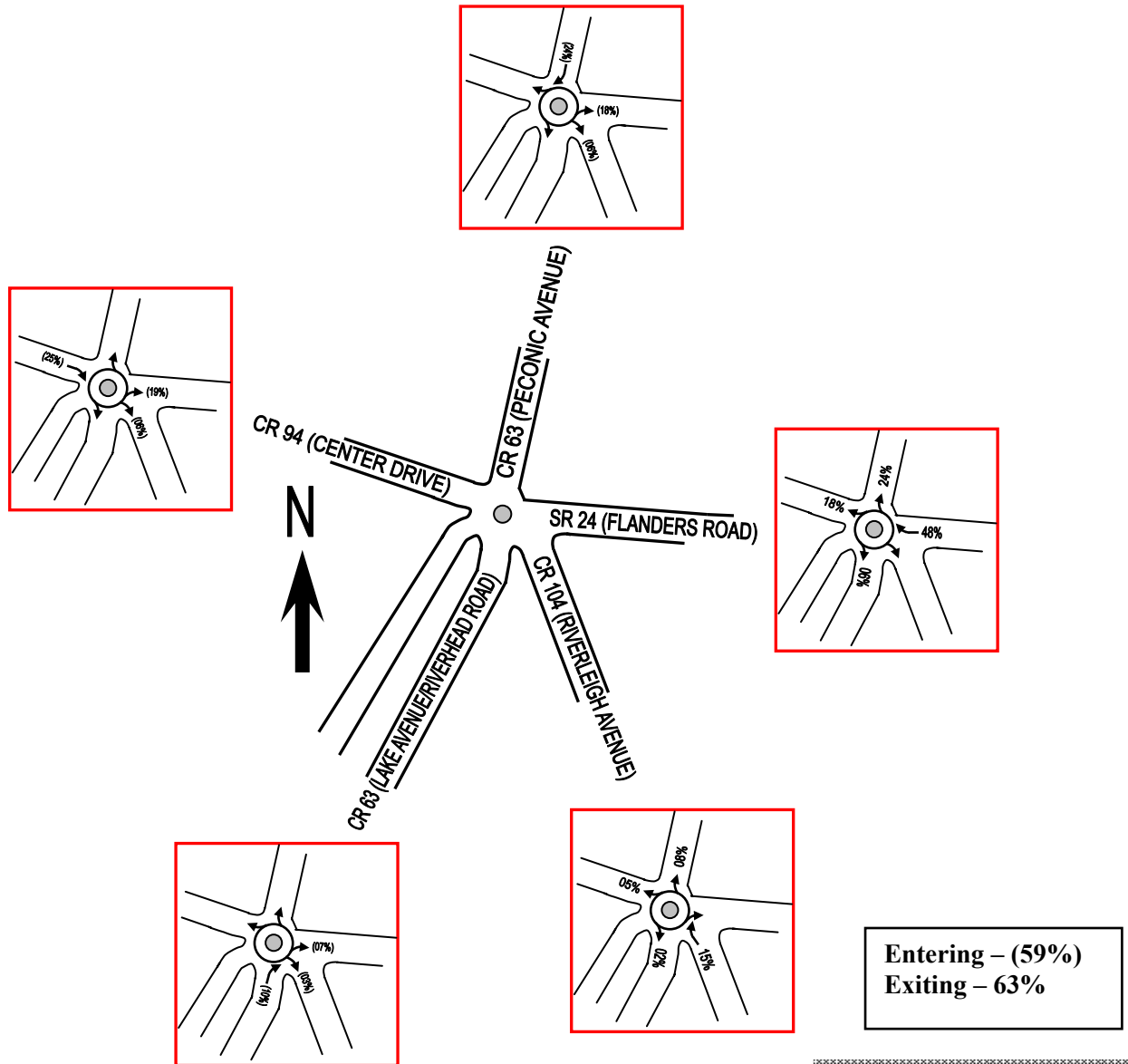
# DIRECTIONAL DISTRIBUTION

## Riverside M.U.P.D.D. Alternative 3 Action



# DIRECTIONAL DISTRIBUTION

## Riverside M.U.P.D.D. Alternative 3 Action Traffic Circle Movements

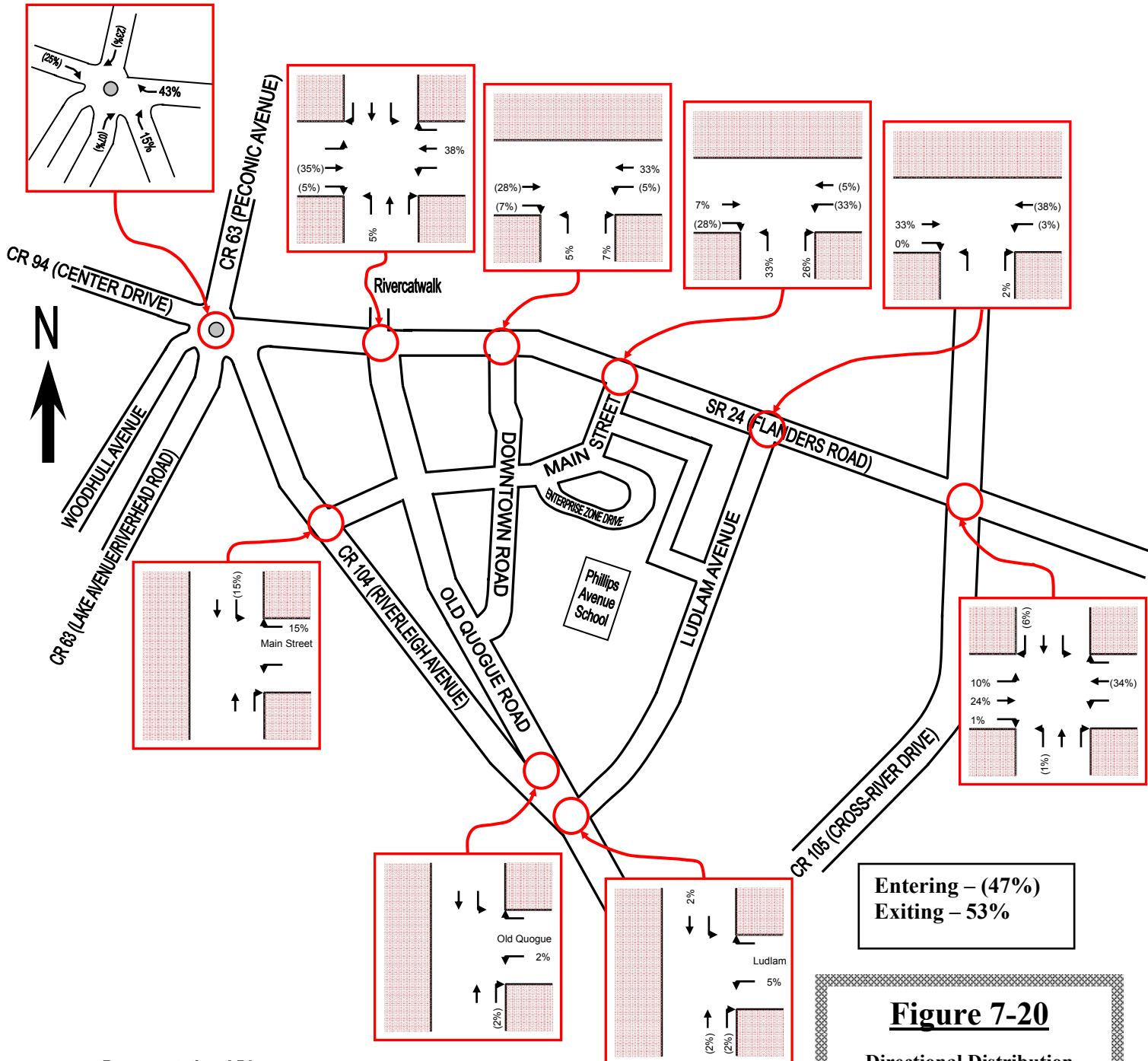


Representational Diagram  
Not To Scale  
Alignment May Be Altered

**Figure 7-19a**  
Directional Distribution  
Percentages  
Alternative 3 “Build” Action  
PM Peak Period

# DIRECTIONAL DISTRIBUTION

## Riverside M.U.P.D.D. Alternative 3 Action

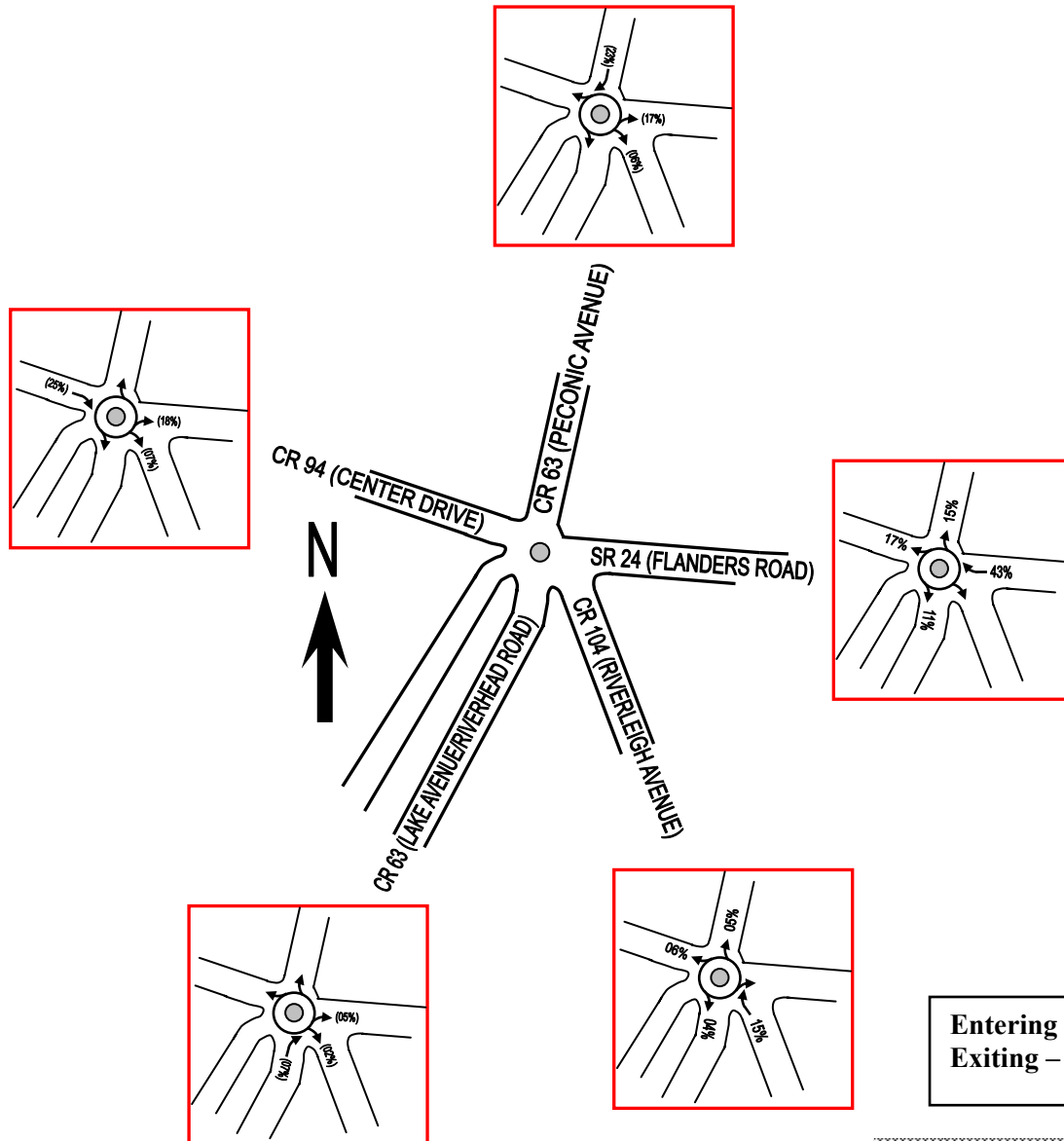


Representational Diagram  
Not To Scale  
Alignment May Be Altered

**Figure 7-20**  
Directional Distribution  
Percentages  
Alternative 3 “Build” Action  
Saturday Peak Period

## DIRECTIONAL DISTRIBUTION

### Riverside M.U.P.D.D. Alternative 3 Action Traffic Circle Movements



Representational Diagram  
Not To Scale  
Alignment May Be Altered

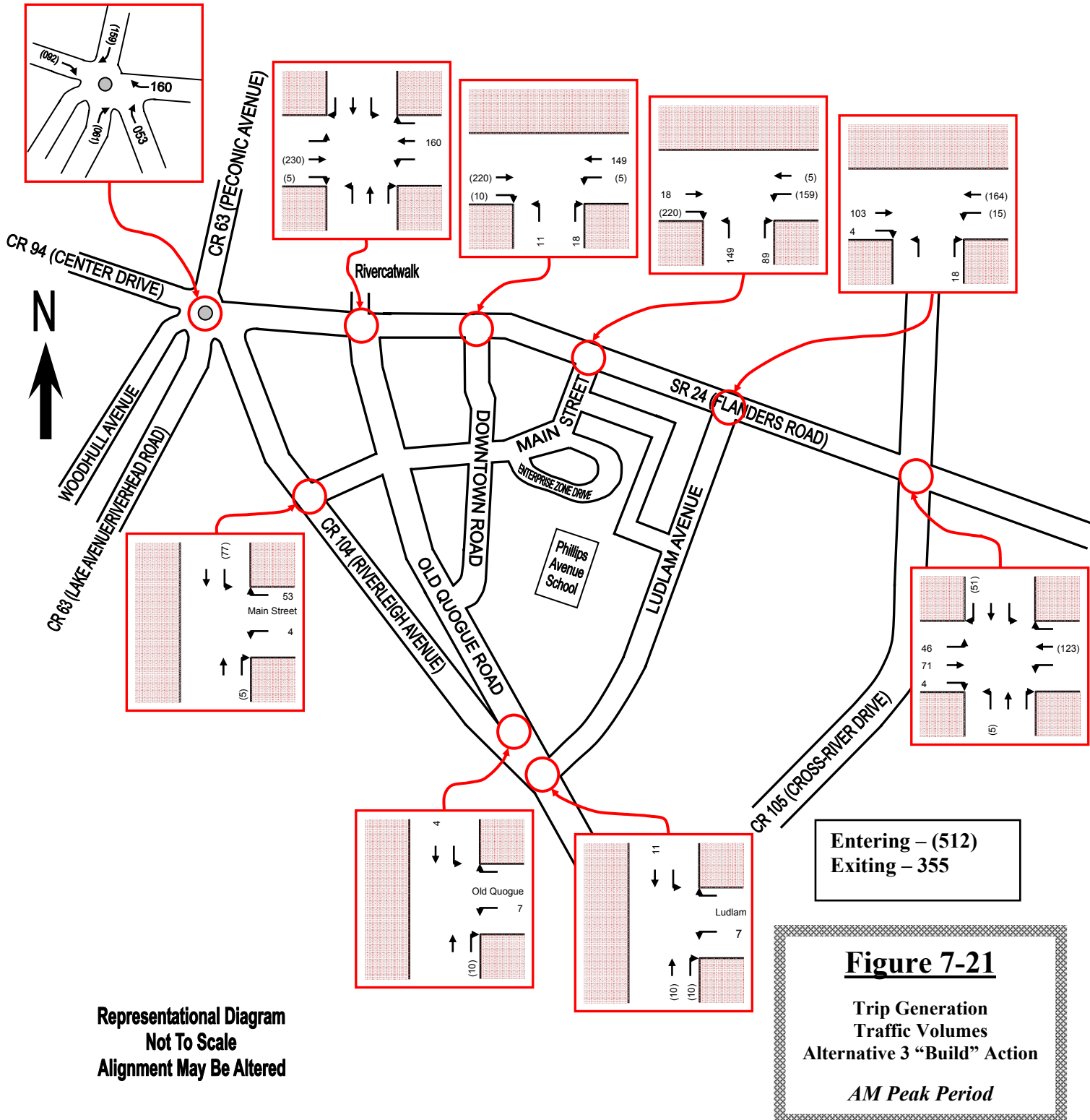
**Figure 7-20a**

Directional Distribution  
Percentages  
Alternative 3 “Build” Action

*Saturday Peak Period*

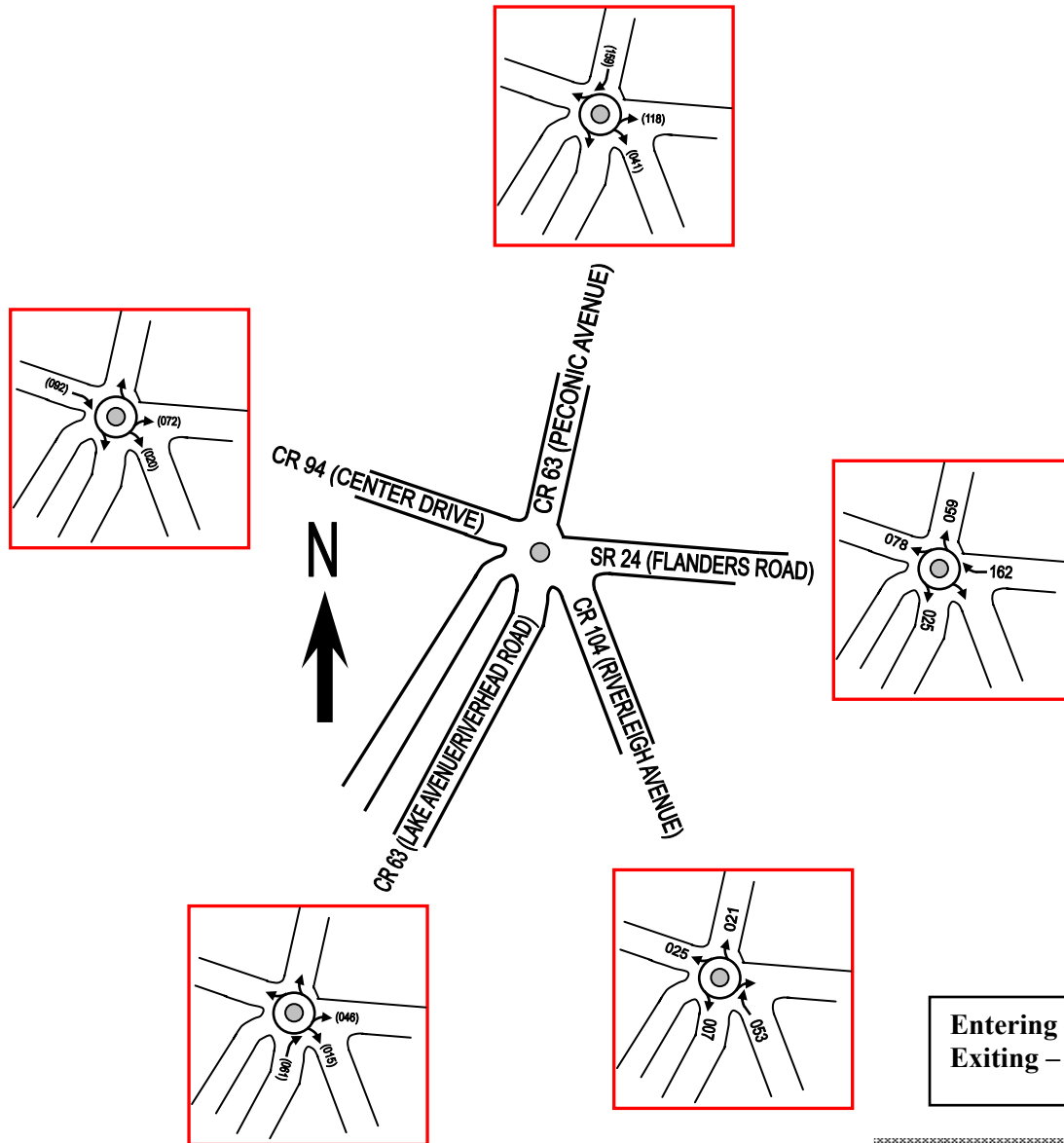
# TRIP GENERATION TRAFFIC VOLUMES

## Riverside M.U.P.D.D. Alternative 3 Action



# TRIP GENERATION TRAFFIC VOLUMES

## Riverside M.U.P.D.D. Alternative 3 Action Traffic Circle Movements



Representational Diagram  
Not To Scale  
Alignment May Be Altered

**Figure 7-21a**

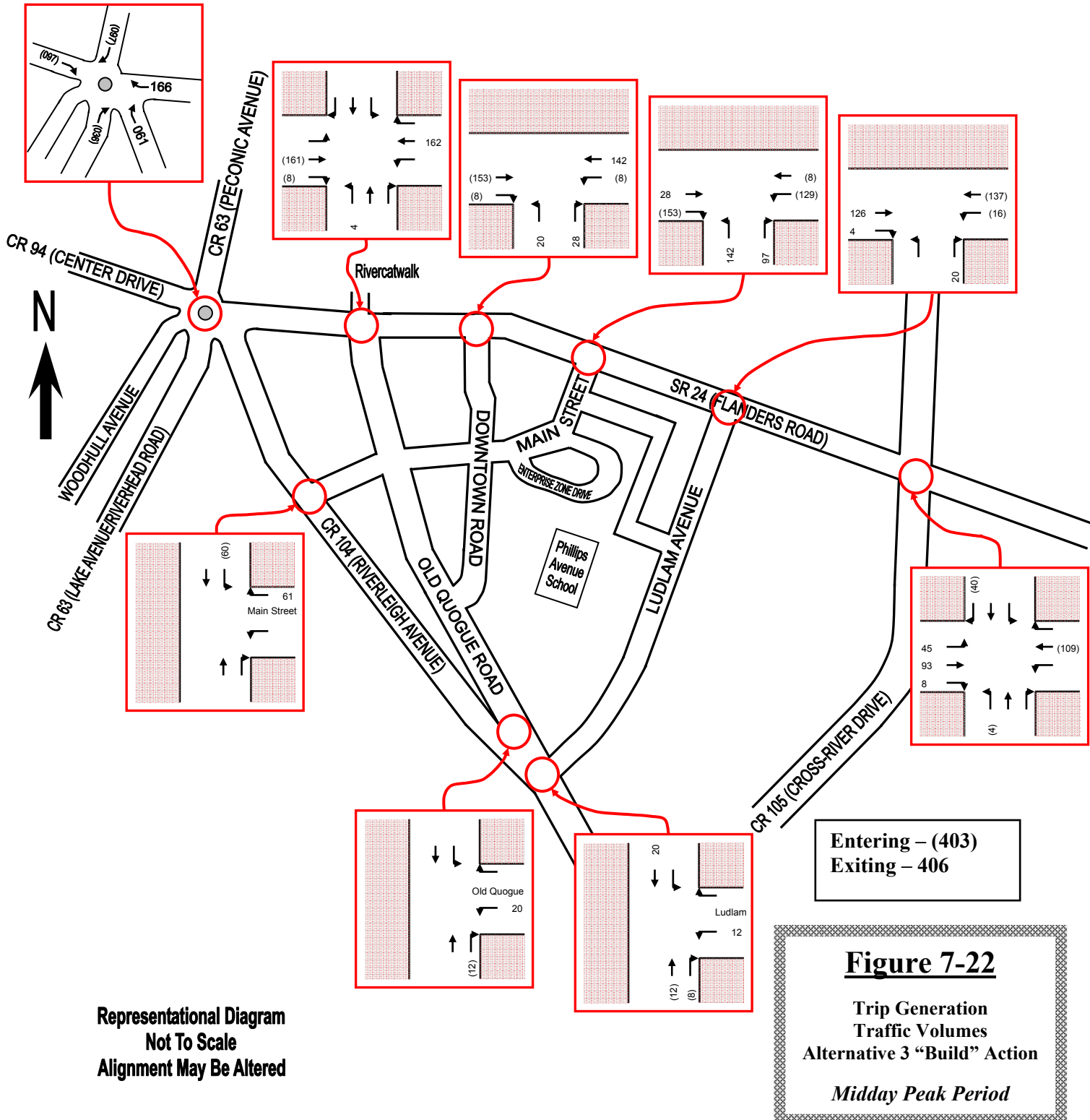
Trip Generation  
Traffic Volumes  
Alternative 3 “Build” Action

AM Peak Period



# TRIP GENERATION TRAFFIC VOLUMES

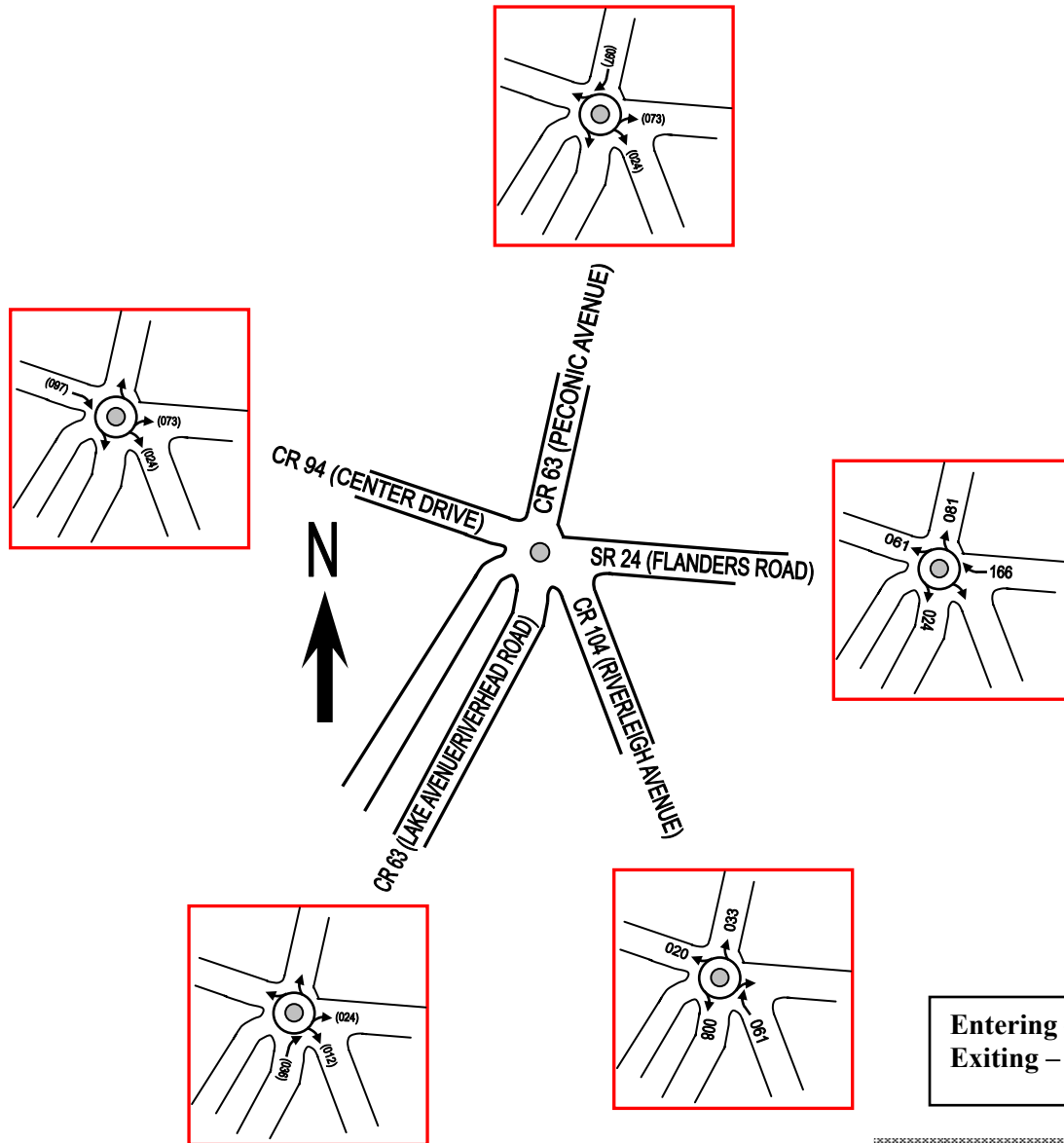
## Riverside M.U.P.D.D. Alternative 3 Action





# TRIP GENERATION TRAFFIC VOLUMES

## Riverside M.U.P.D.D. Alternative 3 Action Traffic Circle Movements



Representational Diagram  
Not To Scale  
Alignment May Be Altered

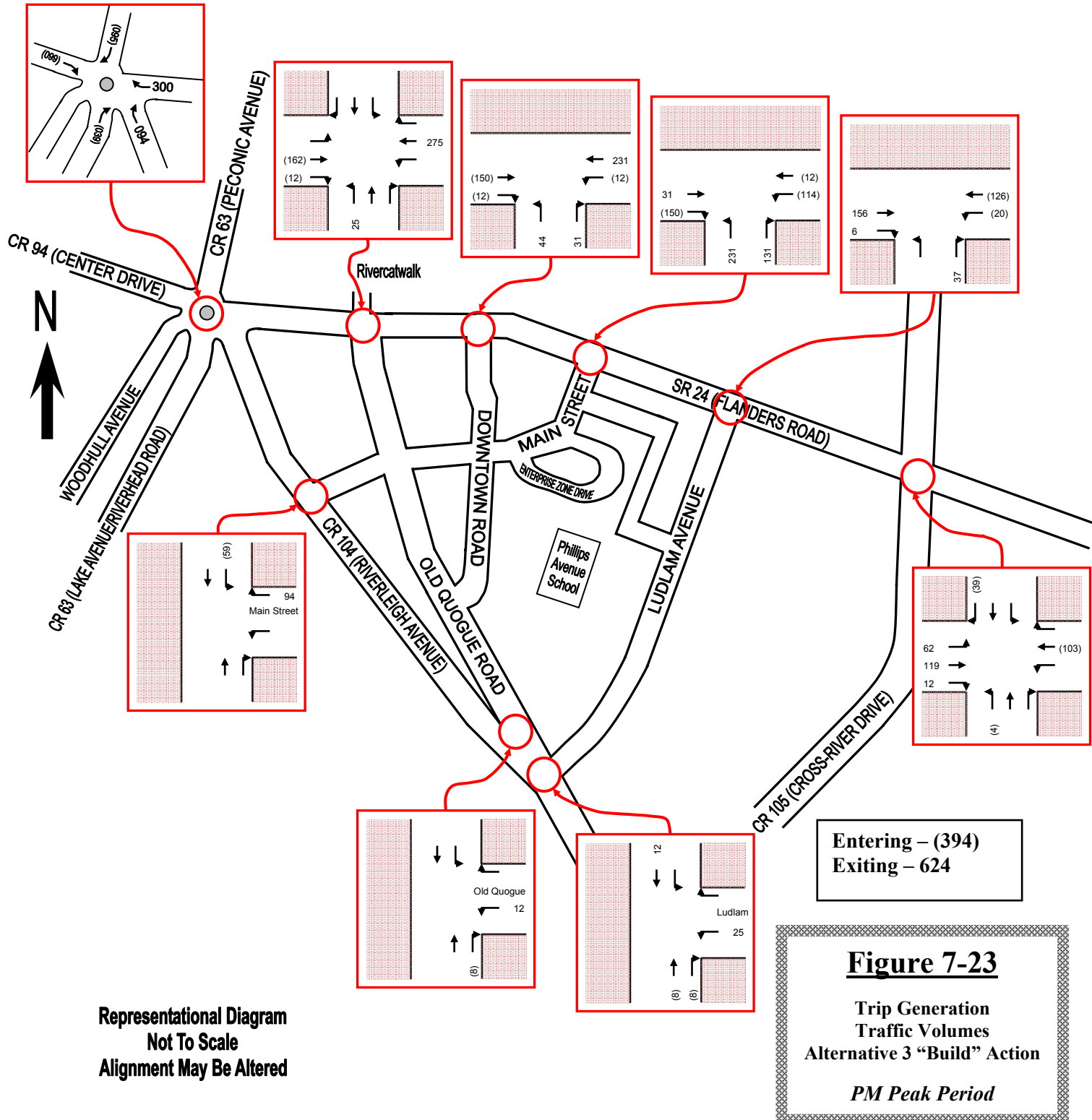
**Figure 7-22a**

Trip Generation  
Traffic Volumes  
Alternative 3 “Build” Action

*Midday Peak Period*

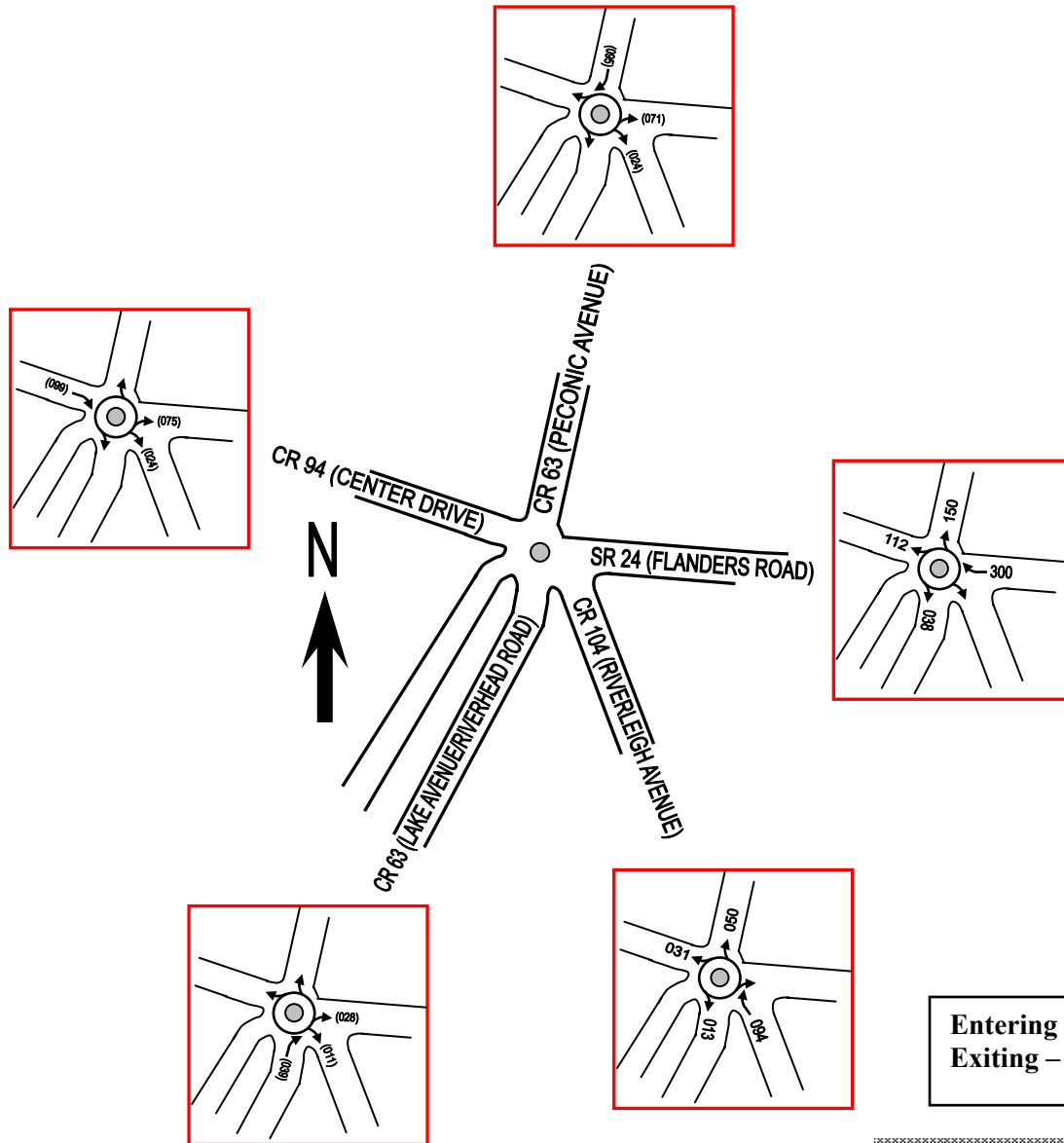
# TRIP GENERATION TRAFFIC VOLUMES

## Riverside M.U.P.D.D. Alternative 3 Action



# TRIP GENERATION TRAFFIC VOLUMES

## Riverside M.U.P.D.D. Alternative 3 Action Traffic Circle Movements



Entering – (233)  
Exiting – 394

Representational Diagram  
Not To Scale  
Alignment May Be Altered

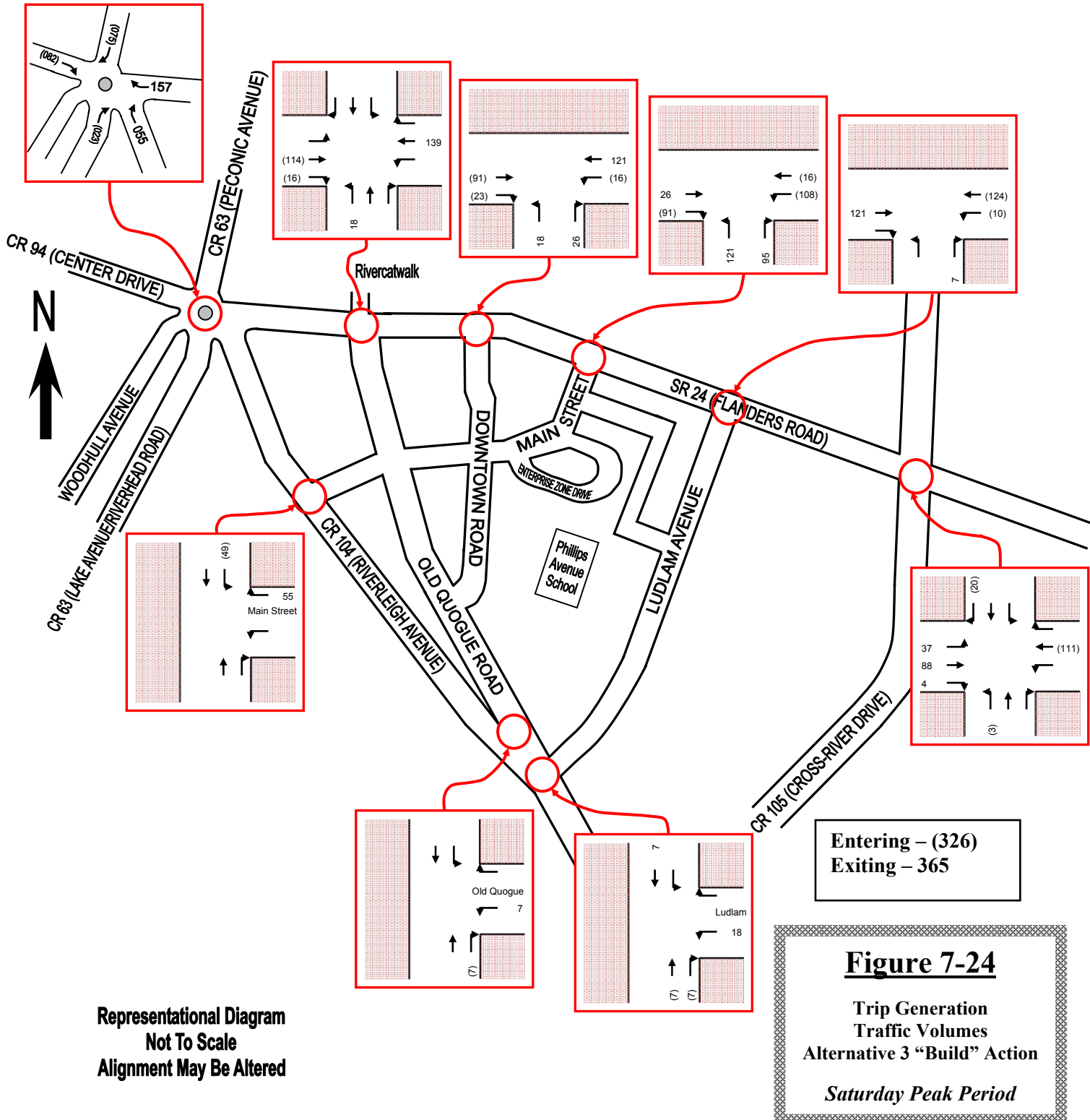
**Figure 7-23a**

Trip Generation  
Traffic Volumes  
Alternative 3 “Build” Action

*PM Peak Period*

# TRIP GENERATION TRAFFIC VOLUMES

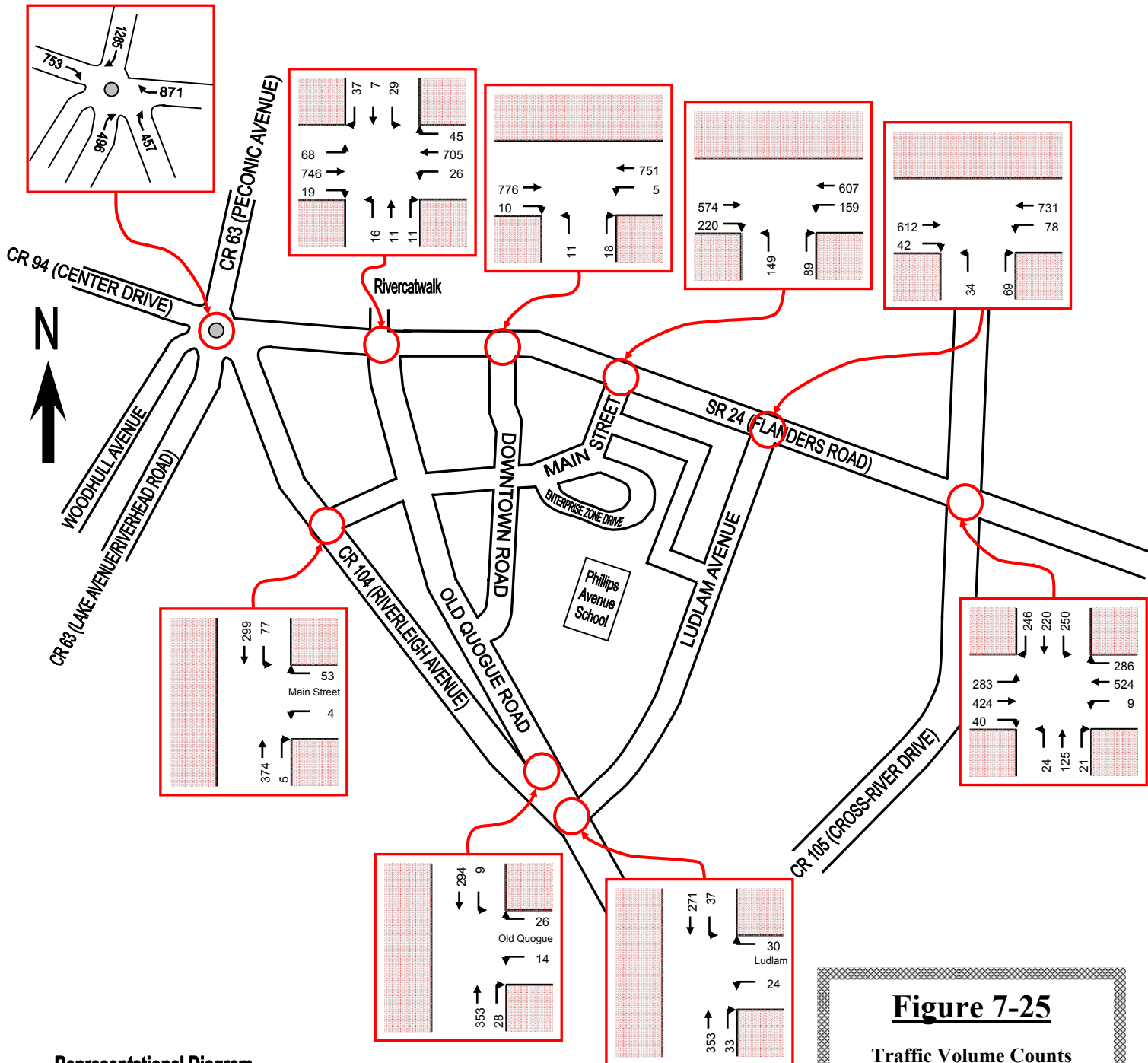
## Riverside M.U.P.D.D. Alternative 3 Action





# TRAFFIC VOLUME COUNTS

## Riverside M.U.P.D.D. 2012 Alternative 3 Build Conditions



Representational Diagram  
Not To Scale  
Alignment May Be Altered

**Figure 7-25**

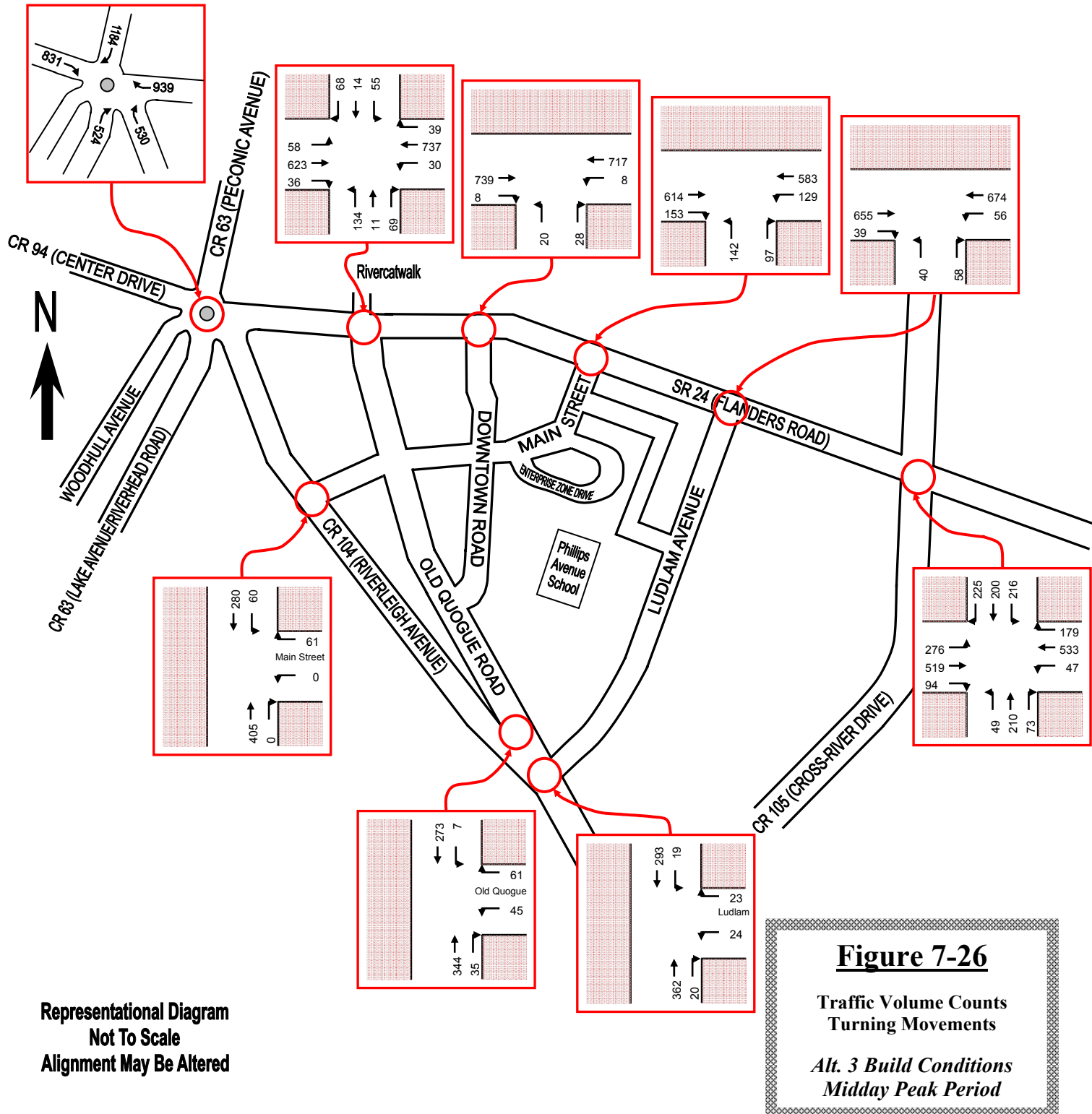
Traffic Volume Counts  
Turning Movements

Alt. 3 Build Conditions  
AM Peak Period



# TRAFFIC VOLUME COUNTS

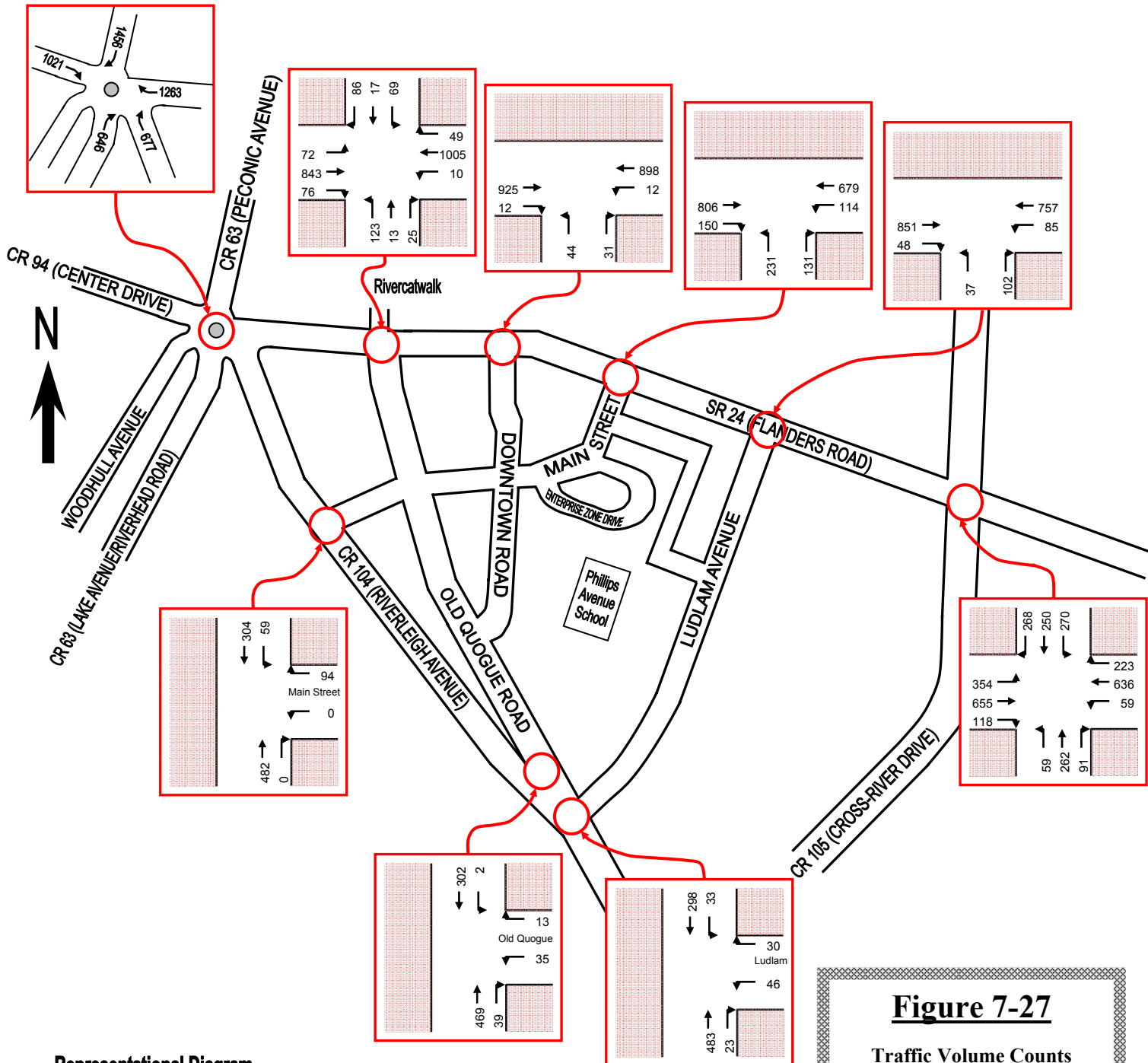
## Riverside M.U.P.D.D. 2012 Alternative 3 Build Conditions





# TRAFFIC VOLUME COUNTS

## Riverside M.U.P.D.D. 2012 Alternative 3 Build Conditions



Representational Diagram  
Not To Scale  
Alignment May Be Altered

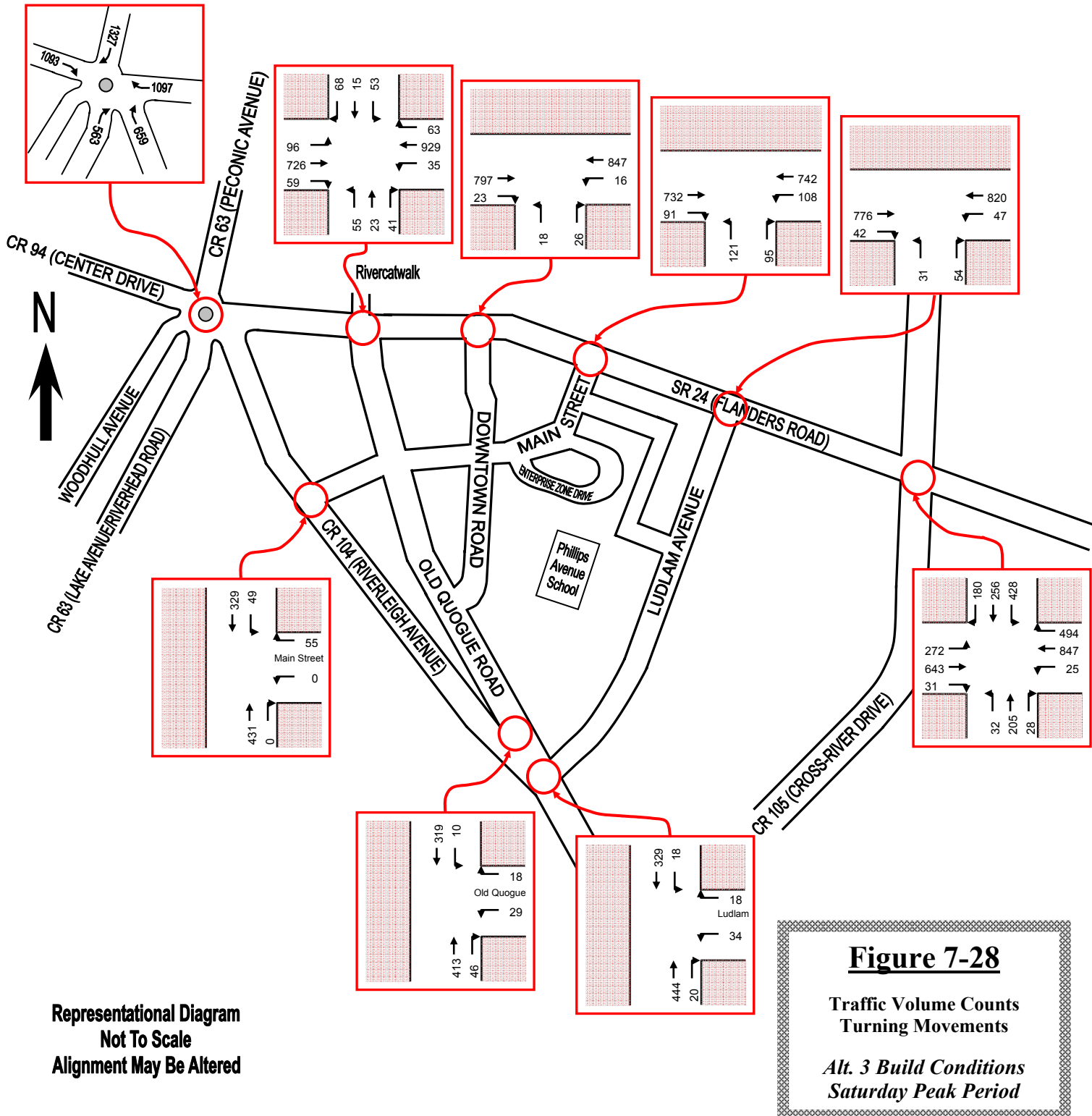
**Figure 7-27**

Traffic Volume Counts  
Turning Movements

Alt. 3 Build Conditions  
PM Peak Period

# TRAFFIC VOLUME COUNTS

## Riverside M.U.P.D.D. 2012 Alternative 3 Build Conditions



**TABLE 7-3: ALTERNATIVE 3 BUILD INTERSECTIONAL LEVELS OF SERVICE**

(Includes Alternative 1 & Alternative 2 Builds)

Riverside MUPDD

Intersection	Control	Movement / Approach	Weekday AM Peak Hour				Weekday Midday Peak Hour				Weekday PM Peak Hour				Saturday Midday Peak Hour			
			Overall	LOS	Delay	v/c	Overall	LOS	Delay	v/c	Overall	LOS	Delay	v/c	Overall	LOS	Delay	v/c
Riverhead Traffic Circle (SR 24, CR 94, CR 104, CR 63, & Peconic Avenue Intersection)	Roundabout Stop Signs	NB CR 63	F	F	370.2	1.59	F	F	975.8	2.96	F	F	2125.1	4.53	F	F	1895.4	3.94
		NMB CR 104	F	F	328.9	1.58	F	F	1924.7	4.03	F	F	2405.5	5.13	F	F	2186.7	4.64
		WB SR 24	F	F	312.3	1.64	F	F	578.0	2.22	F	F	1894.7	5.11	F	F	1981.7	5.26
		SB Peconic	F	F	497.8	2.07	F	F	451.6	1.96	F	F	916.6	2.99	F	F	1509.3	4.29
SR 24 (Flanders Road) at CR 105 (Cross River Drive)	Traffic Signal	EB CR 94	D	D	262.0	1.53	F	F	8534.3	19.93	F	F	14142.4	32.38	F	F	22867.8	51.69
		EB-L	D	D	52.6	0.92	E	E	59.3	0.95	F	F	94.7	1.06	E	E	66.2	0.93
		EB-T	B	B	18.4	0.54	C	C	20.6	0.65	B	B	17.5	0.67	B	B	15.4	0.61
		EB-R	B	B	13.7	0.05	B	B	14.2	0.13	B	B	10.9	0.13	A	A	9.4	0.03
		WB-L	C	C	20.2	0.03	C	C	21.8	0.20	C	C	20.7	0.26	B	B	17.2	0.09
		WB-T	D	D	40.2	0.87	D	D	43.0	0.89	D	D	35.3	0.84	E	E	68.2	1.03
		WB-R	C	C	23.8	0.43	C	C	22.2	0.27	C	C	20.5	0.28	C	C	24.4	0.62
		NB-L	B	B	19.1	0.08	B	B	19.3	0.11	B	B	27.0	0.16	C	C	32.2	0.12
		NB-T	C	C	24.6	0.16	C	C	25.1	0.22	C	C	34.8	0.36	D	D	39.8	0.37
		NB-R	C	C	23.9	0.06	C	C	24.8	0.17	C	C	34.5	0.29	D	D	37.8	0.11
		SB-L	B	B	18.4	0.33	B	B	18.5	0.34	B	B	26.6	0.43	D	D	41.2	0.74
		SB-T	C	C	22.8	0.20	C	C	22.8	0.19	C	C	32.2	0.32	D	D	36.5	0.34
SR 24 (Flanders Road) at Ludlam Avenue	Side Street Stop Sign	SB-R	C	C	25.3	0.44	C	C	25.2	0.43	D	D	40.3	0.69	D	D	38.4	0.47
		WB-L	E	A	9.7	0.11	D	A	9.5	0.07	F	B	11.0	0.13	E	A	10.0	0.06
SR 24 (Flanders Road) at Main Street	Side Street Stop Sign	NB-LR	E	E	45.4	0.62	D	D	31.8	0.45	F	F	132.2	1.06	E	E	42.2	0.50
		WB-L	F	B	10.9	0.22	B	B	10.5	0.17	F	B	11.6	0.18	B	B	10.6	0.15
		NB-L	F	F	504.4	1.85	F	F	369.0	1.56	F	F	1391.0	3.80	F	F	538.4	1.87
		NB-R	B	B	14.2	0.20	C	C	15.2	0.23	C	C	22.3	0.41	C	C	17.6	0.27
SR 24 (Flanders Road) at Downtown Road	Side Street Stop Sign	WB-L	D	A	9.6	0.02	D	A	9.5	0.03	D	B	10.4	0.06	D	A	9.8	0.02
		NB-L	E	E	43.3	0.34	E	E	42.8	0.63	D	D	30.2	0.94	F	F	60.8	0.23
		NB-R	C	C	15.4	0.16	C	C	15.2	0.25	C	C	18.8	0.38	C	C	16.1	0.08
		EB-L	B	B	10.2	0.09	B	B	10.4	0.09	C	B	11.5	0.13	B	B	11.4	0.17
SR 24 (Flanders Road) at Old Quogue Road	Side Street Stop Sign	WB-L	A	A	9.7	0.04	A	A	9.5	0.04	F	B	10.2	0.01	A	A	10.0	0.05
		NB-LTR	C	C	22.1	0.16	F	F	199.6	1.26	F	F	661.8	2.22	F	F	226.7	1.23
		SB-L	C	C	23.4	0.14	D	D	33.3	0.32	E	E	44.7	0.46	F	F	74.1	0.54
		SB-T	C	C	18.4	0.03	C	C	18.5	0.05	C	C	21.9	0.08	D	D	25.2	0.08
		SB-R	C	C	16.0	0.11	C	C	18.1	0.21	C	C	24.4	0.34	C	C	20.0	0.23
		SB-L	A	A	8.3	0.03	A	A	8.2	0.02	C	A	8.6	0.04	A	A	8.4	0.02
CR 104 (Riverleigh Avenue) at Ludlam Avenue	Side Street Stop Sign	WB-LR	B	B	13.9	0.13	B	B	13.7	0.14	C	C	18.3	0.21	C	C	15.5	0.14
CR 104 (Riverleigh Avenue) at Old Quogue Road	Side Street Stop Sign	WB-L	A	A	8.2	0.01	A	A	8.1	0.01	C	A	8.5	0.00	C	A	8.3	0.01
CR 104 (Riverleigh Avenue) at Main Street	Side Street Stop Sign	SWB-L	B	B	15.0	0.07	C	C	16.5	0.23	C	C	18.8	0.14	B	C	16.2	0.11
		SWB-R	B	B	11.8	0.09	B	B	11.6	0.19	B	B	11.4	0.03	B	B	11.1	0.04
CR 104 (Riverleigh Avenue) at Main Street	Side Street Stop Sign	SB-L	A	A	8.4	0.07	A	A	8.4	0.06	B	A	8.7	0.06	A	A	8.5	0.05
		WB-LR	B	B	11.7	0.1	B	B	11.5	0.11	B	B	13.0	0.18	B	B	11.7	0.1

LOS = Level of Service  
Delay = Delay in Seconds/Vehicle  
v/c = Demand Flow (Volume) to Capacity Ratio  
NB = Northbound, SB = Southbound  
EB = Eastbound, WB = Westbound

L=Left  
T=Through  
R=Right

TABLE 7-4: COMPOSITE ALTERNATIVE BUILD LEVEL OF SERVICE TABLE

Riverside MUPDD

Intersection	Control	Movement / Approach	Weekday AM Peak Hour						Weekday PM Peak Hour						Saturday Midday Peak Hour					
			Build		Alternative 1		Alternative 2		Alternative 3		Build		Alternative 1		Alternative 2		Alternative 3		Build	
			Overall	LOS	Overall	LOS	Overall	LOS	Overall	LOS	Overall	LOS	Overall	LOS	Overall	LOS	Overall	LOS	Overall	LOS
Riverhead Traffic Circle (SR 24, CR 94, CR 104, CR 63, & Peconic Avenue)	Roundabout Stop Signs	NB CR 63	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
		WB SR 24	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
		SB Peconic	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
		EB CR 94	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
SR 24 (Flanders Road) at CR 105 (Cross River Drive)	Traffic Signal	EBL	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
		EBT	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
		EBR	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
		WBL	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
		WBT	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D
		WBR	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
		NBL	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
		NBT	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
		NBR	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
		SBL	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
		SBT	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
SR 24 at Ludlum Avenue	Side Street Stop Signs	EBL	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
		EBT	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
		EBR	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
		NBL	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
SR 24 at Main Street	Side Street Stop Signs	WBL	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
		NBL	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
		NBR	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
		WBL	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
SR 24 at Downtown Road	Side Street Stop Signs	NBL	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E	E
		NBR	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
		EBL	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
		WBL	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
SR 24 (Flanders Road) at Old Quogue Road	Side Street Stop Signs	NBL	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
		NBR	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
		SBL	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
		SBR	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
CR 104 at Ludlum Avenue	Side Street Stop Signs	EBL	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
		EBT	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
		EBR	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
		NBL	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
CR 104 at Old Quogue Road	Side Street Stop Signs	WBL	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
		NBL	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C
		NBR	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
		SBL	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
CR 104 at Main Street	Side Street Stop Signs	EBL	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A	A
		EBT	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
		EBR	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
		NBL	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C	C

LOS = Level of Service  
L=Left T=Through  
Delay = Delay in Seconds/Vehicle  
v/c = Demand Flow (Volume) to Capacity Ratio R=Right  
NB = Northbound, SB = Southbound  
EB = Eastbound, WB = Westbound

### **State Route 24 at Main Street**

Motorists turning from Main Street will experience reduced delays, but not to any marked degree that would result in improvements in levels of service. The proposed roadway connection will not produced the desired effect of drawing vehicles away from this intersection.

### **State Route 24 at County Road 105**

The Alternative 3 Build condition will slightly change volumes for turning movements at the intersection, but not to any appreciable degree. Levels of service will be maintained at the acceptable Proposed Action Build condition levels.

## **7.4 Conclusions on Alternative Build Traffic Conditions**

1. Aligning the Rivercatwalk driveway with Old Quogue Road at SR 24, in conformance with the Alternative 1 Build scenario, will improve levels of service during the weekday morning peak traffic period, but not during other peak periods.
2. Alternative 1 Build conditions will slightly reduce delays at the Riverhead Traffic Circle, but will not improve upon the Proposed Action Build condition levels of service.
3. Implementing the Alternative 1 alignment will make the intersection of SR 24 and Old Quogue Road/Rivercatwalk driveway a much stronger candidate for the installation of some type of mitigation, such as a traffic signal or a roundabout.
4. The extension of Main Street through Old Quogue Road to a new intersection at CR 104, in accordance with the Alternative 2 Build scenario, will produce the opposite of the desired effect at the Riverhead Traffic Circle. It will cause an increase in delays during all peak traffic periods. Capacity analysis showed that

the roundabout has better circulation when the majority of the traffic approaches from westbound SR 24 instead of being split between SR 24 and CR 104.

5. The intersection of SR 24 and Downtown Road would significantly benefit from the Alternative 2 roadway extension. Levels of service would improve to an acceptable LOS D during all peak traffic periods. This would reduce the need to employ mitigation measures at the intersection.
6. The Alternative 2 roadway extension would reduce the amount of traffic traveling through the residential portion of Old Quogue Road. It also creates the ability to potentially dead end Old Quogue Road at CR 104.
7. The Alternative 3 creation of a new roadway from the project site to Ludlam Avenue would not produce the desired benefit of significantly reducing delays at the intersection of SR 24 and Main Street.
8. Alternative 3 Build conditions would lessen delays at the intersection of SR 24 and Ludlam Avenue, but would be offset by increased delays at the intersection of CR 104 and Ludlam Avenue.
9. Alternative 3 Build conditions would diminish the quality-of-life for residents along Ludlam Avenue by increasing traffic volume on the roadway. It would also be a detriment to traffic conditions and safety at the Phillips Avenue School. These results effectively negate the viability of the Alternative 3 Build scenario.